INTRODUCTION AND BACKGROUND

In 1997, Canada and the United States agreed to work toward the virtual elimination of persistent toxic substances in the Great Lakes by signing the *Great Lakes Binational Toxics Strategy: Canada-United States Strategy for the Virtual Elimination of Persistent Toxic Substances in the Great Lakes*, also known as the Great Lakes Binational Toxics Strategy or GLBTS. Since 1998, Environment Canada (EC), the United States Environmental Protection Agency (USEPA), and Great Lakes Basin stakeholders have been working toward the goal of virtual elimination of strategy substances. This report represents the third annual report of progress under the Great Lakes Binational Toxics Strategy.

The main focus of the strategy implementation remains the twelve "Level I" substances:

Mercury	Benzo(a)pyrene/Hexachloro-	Pesticides
PCBs	benzene (B(a)P/HCB)	Alkyl-lead
Dioxin	Octachlorostyrene (OCS)	

The Great Lakes Binational Toxics Strategy establishes reduction challenges for the Level I substances in the timeframe 1997 to 2006. Several "Level II" substances are also named in the strategy with the goal of promoting pollution prevention and sound management to reduce levels in the environment. Also included in the strategy are challenges to complete or be well advanced in remediation of priority sites with contaminated bottom sediments and to evaluate and report jointly on long-range transport of strategy substances from world-wide sources. Highlights of progress toward achieving these challenge goals over the past year are presented in the following section. A time line of activities undertaken since the strategy's inception, as well as related events, is presented in the Appendix.

The Great Lakes Binational Toxics Strategy reinforces and coordinates with other programs and activities to control and prevent releases of persistent toxics, including:

- EC's Strategic Options Processes (SOPs) and development of Canada-Wide Standards (CWS),
- EPA's Persistent, Bioaccumulative, and Toxics (PBT) Initiative (www.epa.gov/pbt),
- EPA's Great Waters Program (www.epa.gov/airprogram/oar/oaqps/gr8water), and
- Other international activities such as the North American Agreement on Environmental Cooperation and the United Nations Environment Programme (UNEP) Persistent Organic Pollutants (POPs) Treaty (www.epa.gov/oiamount/iepi.htm).

Analytical Process Reports

The Binational Toxics Strategy provides a 4-step analytical framework to guide EC and USEPA, along with stakeholders, as they work toward virtual elimination of strategy substances. The 4-step framework outlined in the strategy is the following:

1. Information gathering;
2. Analyze current regulations, initiatives, and programs which manage or control substances;
3. Identify cost-effective options to achieve further reductions;
4. Implement actions to work toward the goal of virtual elimination.

Consistent with this 4-step framework, analytical process reports have been prepared to document workgroup efforts in implementing the strategy. To date, reports associated with Steps 1, 2, and 3 have been drafted for all Level I substances: alkyl-lead, B(a)P, HCB, dioxin, mercury, OCS, PCBs, and the five canceled pesticides (aldrin/dieldrin, chlordane, DDT, mirex, and toxaphene). In addition, preliminary assessments of the Level II substances in both Canada and the U.S. have been documented in Level II reports prepared by each country. The analytical process and Level II reports, as well as previous GLBTS progress reports, can be found on the Internet at the GLBTS website, www.epa.gov/glnpo/bns/.

Integration Group

In addition to the substance-specific workgroups identified above, an Integration Group comprised of the governments and interested stakeholders was formed to discuss issues relevant to, but outside the scope of, the individual substance-specific workgroups. The Integration Group met February 15, 2000, and September 22, 2000. Issues discussed at these meetings included contaminated sediments, long-range transport, a GLBTS communications strategy, negotiations on the global treaty on persistent organic pollutants (POPs), and significant stakeholder activities related to the GLBTS. In addition, a municipal solid waste incineration workshop was held on May 15, 2000, in Toronto, Ontario.

Outlook 2001

The Great Lakes Binational Toxics Strategy will continue to advance toxic reduction activities. Specific plans the GLBTS intends to accomplish are the following:

- Initiate partnerships for voluntary toxic reductions
- Launch the outreach effort described in the communications strategy
- Fund additional work at the stakeholder level in support of GLBTS efforts
- Sponsor workshops on sediment remediation and long range transport
- Continue to reinforce other efforts such as the PBT Initiative, CWS, and POPs Treaty

GREAT LAKES BINATIONAL TOXICS STRATEGY HIGHLIGHTS NOVEMBER 1999–NOVEMBER 2000

Stakeholder fora were held on November 18, 1999, in Chicago, Illinois, and on May 16, 2000, in Toronto, Ontario. These meetings included a plenary session with separate breakout sessions for the chemical-specific workgroups. Progress achieved in the past year on each of the Level I chemicals, as well as on cross-cutting activities, remediation of contaminated sediments, and characterization of long-range transport, is described below.

Mercury

Canadian workgroup co-chair: Robert Krauel
U.S. workgroup co-chair: Alexis Cain

Workgroup Activities and the 4-Step Process

The focus of the mercury workgroup has been on Steps 3 and 4: the examination and implementation of reduction options, and the development of partnerships and commitments. Workgroup activities have included posting a draft report on U.S. Sources and Regulations (Steps 1 and 2) on the GLBTS web site (http://www.epa.gov/glpno/bns/mercury/stephg.html), as well as an "Options Report" (Step 3), posted to the web in September of 2000. Public comments have been received on the Step 1&2 report.

Reduction Activities

Numerous mercury reduction activities are occurring in Canada to meet the goal of reducing releases of mercury in the Great Lakes Basin, and in the U.S. to meet the goal of reducing the deliberate use of mercury and releases of mercury nationwide. The following is a selection of activities reported by Mercury workgroup participants. Links to web sites with additional details about many of these activities can be found at http://www.epa.gov/glnpo/bns/mercury/.

Chlor-Alkali Industry: This U.S. industry, through the Chlorine Institute, committed (in 1996) to reducing mercury use 50 percent by 2006. Efforts have involved meetings to address technology issues, plant visits by USEPA, industry workshops, technology transfers between members, and reports of individual company activities to achieve the goal. The industry reported in May 2000 that they have reduced mercury use 42 percent, in addition to reductions that were the result of decreasing production capacity, between 1995 and 1999. EPA and affiliated researchers from the University of Michigan and the Department of Energy's Oak Ridge National Laboratory conducted a study of mercury emissions during chlor-alkali production in voluntary collaboration with an Olin Corporation chlor-alkali factory in Georgia. The study applied new mercury vapor measurement technologies. The work measured fugitive mercury vapor emissions

and collected samples of products, solid wastes, and effluents to estimate total mercury consumption by all paths. The study should help identify methods for reducing mercury emissions at chlor-alkali facilities.

Medical Sector: Under the Memorandum of Understanding between the American Hospital Association and USEPA, Hospitals for a Healthy Environment has produced a Mercury Virtual Elimination Plan for U.S. hospitals. In addition, workgroups are implementing work plans on various aspects of hospital waste reduction. State and local governments are conducting outreach and providing technical assistance to hospitals, and the National Wildlife Federation (NWF) has continued its outreach and education effort focused on hospitals. Nearly 600 medical facilities have taken NWF's "Mercury Free Medicine Pledge," committing to phase out mercury-containing devices and chemicals. In the past six months, new outreach materials have been developed and media coverage of the campaign has been expanded. Participating facilities receive information on mercury reduction practices and how to reduce overall hospital toxicity and volume and to implement environmentally preferable purchasing and alternative waste management practices. The Canada Centre for Pollution Prevention will hold a second series of pollution prevention training sessions for healthcare facilities during January-March 2001. USEPA awarded a Pollution Prevention Environmental Justice grant to the St. Clair (IL) County Health Department to promote alternatives to mercury-containing devices among local health care facilities. This project, which takes place in the 'Gateway' area near St. Louis, is considered a model for comparable opportunities, including those in the Great Lakes Basin.

Industrial Use of Mercury-Containing Devices: Bethlehem Steel Burns Harbor, Ispat Inland-East Chicago, and US Steel-Gary have developed mercury reduction plans, focusing primarily on mercury-containing devices, under a voluntary agreement with USEPA, Indiana Department of Environmental Management, and the Lake Michigan Forum. They have agreed to help promote mercury reduction among their suppliers as well. Michigan Department of Environmental Quality, with funding from EPA, conducted a mercury workshop in September 2000 for industries such as steel plants and utilities to educate them about ways of identifying mercury use and to encourage them to voluntarily discontinue mercury use and to replace any mercury-containing instruments with mercury-free alternatives. Wisconsin Electric Power (WEPCo) conducted a survey in 1999 showing that mercury-containing equipment in WEPCo's power plants contained a total of approximately 250 pounds of mercury, approximately 100 pounds of which will be removed from two older units during 2001. WEPCo also plans to change suppliers of caustic soda used in power plant water treatment processes in order to reduce mercury discharges.

Consumers Energy Company began a Mercury Pollution Prevention Initiative in 1996, which has reduced stock mercury by 351 pounds, or 77%, since the beginning of the program. Consumers Energy has also 1) reinstituted a replacement program for older mercury-containing gas regulators, the company's single largest source of equipment related mercury, 2) replaced all mercury-operated flame sensor switches with a non-mercury, oil-filled switch, 3) continued the replacement and collection of company equipment containing mercury, 4) included safe mercury management information in the company's ongoing training programs, and 5) developed

equipment procurement policies to minimize mercury in new purchases. A reduction of an estimated 648 pounds, or 22%, of mercury in use or in storage throughout the company has been achieved as a result of Consumer Energy's Mercury Pollution Prevention Initiative.

Mercury in Schools: The University of Wisconsin extension office has created a website (www.mercury-k12.org) and list server to share information about mercury in schools, including mercury reduction opportunities and mercury cleanup, curriculum, and policy approaches. Together with local, State, and Federal sponsors, "mercury in schools" workshops have been presented to a Milwaukee meeting of science teachers from throughout the Midwest, as well as to groups of local teachers throughout Wisconsin and in Detroit and Chicago; another workshop is scheduled for Indianapolis. There have been several additional informational workshops for teachers and key administrators throughout various areas of Michigan. School collection events will be taking place in the Milwaukee and Superior areas, in which schools can turn in their mercury devices for recycling in exchange for money that can be used to purchase mercury-free equipment.

Batteries: Mercury levels in collected alkaline batteries continue to decline in the U.S. The National Electrical Manufacturers Association (NEMA) battery section conducted surveys of mercury levels in alkaline batteries collected in Camden County, New Jersey, and Lee County, Florida. Average mercury levels were 284 ppm for alkaline batteries in Camden County and 289 ppm for alkaline batteries in Lee County, down from the roughly 10,000 ppm in typical batteries before the battery industry began to eliminate mercury from most batteries in the late 1980s. NEMA projects that mercury levels will continue to decline by 50 percent every two years.

Lamps: Since the mid-1980's, lamp manufacturers have reduced the mercury content of fluorescent lamps by approximately 80 percent. The average mercury content of a typical 4-foot lamp was 11.6 mg in 1999, according to a NEMA survey. Smaller diameter lamps, such as T8 (1") and T5 (5/8") have even lower mercury content and are more efficient, therefore resulting in reduced mercury emissions from the fossil fuels used to energize them over life. Other contributing factors to lower mercury emissions over lamp life are:

- The introduction of lamps with average life ratings higher than 20,000 hours. These include fluorescent lamps with average life ratings of 24,000 and 30,000 hours and some specialty lamp types with average life ratings of up to 100,000 hours.
- Compact fluorescent lamps and some other lamp types with mercury content below 5 mg.
- High-pressure sodium lamps with lowered mercury content, and a limited range of mercury-free high-pressure sodium lamps.

NEMA lamp manufacturers continue to endorse lamp recycling as the preferred method of disposal. Information on lamp disposal requirements in each state, and a list of U.S. lamp recyclers and lamp handlers, can be found at www.lamprecycle.org. Lamp manufacturers in Canada, through Electro-Federation Canada (EFC), have committed to a reduction in the average mercury content of fluorescent and HID lamps of 60 percent by 2005, and 80 percent by 2010, using a 1990 baseline. This is in support of the Canada-Wide Standards (CWS) for Mercury.

USEPA Waste Minimization staff developed and distributed a fact sheet on the proper disposal of used fluorescent lamps, which are considered a 'Universal Waste' under RCRA regulations. Building owners and managers can collect and store used bulbs with fewer restrictions, so that used lamps can be effectively recycled.

Thermostats: In the U.S., the Thermostat Recycling Corporation has collected over 500 pounds of mercury from over 57,000 thermostats collected and processed from January 1, 1998 to June 30, 2000. Over 60% of the collected mercury, 319 pounds, came from Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. The program has recently been expanded to the Northeast and will gradually be expanded to include the entire country.

Dentistry: The Great Lakes Dental Mercury Reduction Project funded by the Great Lakes Protection Fund has produced a template brochure: *Amalgam Recycling and Other Best Management Practices*. By the end of the year all of the Great Lakes Dental Associations will have reprinted and distributed this document to their memberships. The Ontario Dental Association has developed a "Best Management Practices" manual, which includes information concerning amalgam separators. The manual has been distributed to all Ontario dentists. The City of Toronto has passed a sewer use bylaw that requires amalgam separators to be installed in all Toronto dental practices by January 1, 2002. Canada Wide Standards have been proposed for dental amalgam which would require the application of "Best Management Practices," including the installation of an ISO-certified trap or its equivalent in order to achieve a national 95% reduction in mercury releases from dental practices by 2005, from a base year of 2000.

Dental Wastewater Collection and Recycling System: A grant to the University of Illinois at Chicago College of Dentistry entitled "Dentist Recycling and Awareness Training Module" is intended to reduce some of the mercury loadings to wastewater facilities from dental offices and clinics by using relatively simple changes in dental amalgam disposal practices. Given stricter mercury discharge standards, the mercury loading from dental practices and other small sources may influence the ability of treatment facilities to meet National Pollutant Discharge Elimination System (NPDES) permit requirements. Research has indicated that over 50% of the mercury in dental wastewater can be collected from particles caught in the in-line trap.

Dental Wastewater Characterization: Through an Interagency Agreement, an award entitled "Mercury Removal from the Dental-Unit Wastewater Stream" was given to the U.S. Navy, Naval Dental Research Institute, Great Lakes, Illinois. The purpose of this project is to characterize both organic and inorganic mercury in the dental wastewater stream and to identify efficacious and cost-effective methods of removing heavy metals from this waste stream.

Thermometers: Coalitions including Health Care Without Harm and the National Wildlife Federation have successfully encouraged several U.S. retailers to stop the sale of mercury-containing thermometers to the public and have promoted local bans on the sale of mercury fever thermometers. Duluth, Minnesota, Ann Arbor, Michigan, unincorporated areas of Dane County, Wisconsin, as well as several Dane Country municipalities, have banned the sale of mercury thermometers. In addition, numerous thermometer exchanges have been conducted. For

instance, the Indiana Department of Environmental Management, local solid waste management districts, the Regional Household Hazardous Waste Task Force, Eli Lilly and Company, and Cinergy Corporation partnered to host a number of mercury thermometer exchanges throughout Indiana. In the past year, this partnership has given out over 3,500 free digital thermometers in exchange for mercury thermometers from households. The Michigan Department of Environmental Quality has been awarded a grant to work with retailers on the phase out of mercury-containing thermometers and to distribute 10,000 digital thermometers in exchange for mercury thermometers.

Dairy Manometer Replacement: The Wisconsin Department of Natural Resources and the Department of Agriculture have conducted a dairy mercury manometer replacement program to allow dairy farmers to replace their mercury manometers for electronic manometers at a discounted price. Dairy equipment dealers are given money to partially cover the cost of mercury manometer removal and replacement, and a contractor picks up the removed manometers for recycling. Approximately 375 mercury manometers have been recycled through this program.

Household and Small Business Mercury Collection: Several Great Lakes States have conducted numerous successful mercury collection programs. For instance, since October 1998, Indiana has collected over 4,500 pounds of mercury and mercury-containing items from households, more than half of which has been collected in the past year. Bowling Green State University, in conjunction with the Ohio EPA and other private and public entities, collects uncontaminated elemental mercury from citizens, academic institutions, medical facilities, industries, and any other sources. This free program has collected over 1,500 pounds of mercury throughout Ohio, southern Michigan, eastern Indiana, and western Pennsylvania. The Wisconsin Mercury Recycling Program is in progress in eight Wisconsin mercury reduction communities. This program allows households and businesses to recycle almost all mercury-containing items for free, or at low cost, at local Clean Sweep events and Household Hazardous Waste Facilities. This program was designed to last one year but may be extended for one more year. In addition, Dane County, Wisconsin, has put together a mercury reduction plan and is working with the respective interest groups according to the plan's priorities, which include thermostats, switches in autos and appliances, fluorescent lights, medical facilities, and schools.

Emissions from Coal-Fired Utility Boilers: USEPA evaluated data on mercury in coal and speciated emissions. The data were received in 1999 under an Information Collection Request (ICR). USEPA will use this evaluation, along with an evaluation of methyl mercury health risks by the National Academy of Sciences and studies of emissions control technology, in making a determination by the end of 2000 regarding whether to regulate mercury emissions from coal-fired boilers. In conjunction with the ICR, Wisconsin Electric Power Company (WEPCo) initiated a comprehensive evaluation of mercury emissions as well as a screening assessment of possible emission reduction strategies for coal-fired units, including voluntary testing of six additional units for mercury speciation. The Public Service Electric & Gas Company (PSE&G), in partnership with Electric Power Research Institute, is currently conducting a pilot-scale evaluation of the capabilities of a polishing high air-to-cloth ratio pulse jet baghouse with sorbent injection as an effective particulate, mercury, and acid aerosol emission-control technology. The

pilot demonstrated significant pollutant reduction levels, including up to 90 percent control of mercury emissions. PSE&G is seeking federal appropriations to assist in installing the technology on a full scale. As part of its efforts to control mercury emissions from coal combustion, Consumers Energy Company reported a 1998 fuel mix that consisted of 42.9% of nuclear energy, oil and natural gas, renewable resources, and other non-coal sources of energy. This represents a slight decrease (1.2%) in the company's coal use from 1995, and is comparable to the estimated 1998 U.S. fuel mix of 56.9% coal and 43.1% non-coal sources. For example, the company's Campbell plant used approximately 4,800 tons of sawdust as supplemental fuel in 1998.

Automobiles: The Alliance of Automobile Manufacturers, which represents auto manufacturers with operations in North America, committed to the eventual phase-out of mercury switches used in auto convenience lighting and agreed to work cooperatively with States on pilot programs to encourage auto dismantlers and scrappers to remove mercury switches. The Michigan Department of Environmental Quality (MDEQ) has led discussions with the Automobile Alliance and the Automotive Recyclers of Michigan. DaimlerChrysler has completely phased out mercury-containing light switches, and Ford has provided a verbal commitment to phase out mercury-containing light switches by 2002. General Motors projects that mercury convenience lighting switches will be phased out of all but one low-volume vehicle line by the 2002 model year, with all mercury-containing switches replaced by model year 2004. A "clean sweep" to collect all mercury switches from vehicles currently in Michigan salvage yards was conducted during September and October, 2000. The New York Department of Environmental Conservation has been implementing programs to remove switches from vehicle fleets and scrapped vehicles. A grant was given to Erie County, New York, for an automotive switch recycling project that consists primarily of outreach to Erie County scrap and salvage yards as well as the collection and disposal of automotive mercury switches removed from vehicles prior to crushing and shredding.

Watershed Approaches: The National Wildlife Federation is co-chair of two multi-stakeholder task forces (one for the State of Ohio and one for the St. Louis River, MN) attempting to develop watershed cleanup plans (known as TMDLs, or Total Maximum Daily Loads) that address mercury from airborne and waterborne sources. The Ohio task force developed consensus recommendations for the process of developing watershed cleanup plans for mercury for the entire State. The recommendations strongly urge the State to establish and fund a mercury pollution prevention task force for the State. Efforts for the St. Louis River are ongoing.

Ban on Mixing Zones: USEPA has finalized a regulation (Federal Register: November 13, 2000; Vol. 65, No. 219, pp. 67638-67651) that will ban the use of mixing zones that allow discharges of bioaccumulative chemicals of concern (BCCs) into the Great Lakes Basin, subject to certain exceptions for existing discharges. A mixing zone is an area where pollutants are mixed with cleaner receiving waters to dilute their concentration in the water. Inside a mixing zone, discharges of toxic pollutants are allowed to exceed the water quality criteria set by a State, as long as the standards are met outside or near the boundary of the mixing zone. The final rule, Final Rule to Amend the Final Water Quality Guidance for the Great Lakes System to Prohibit

Mixing Zones for Bioaccumulative Chemicals of Concern, prohibits mixing zones for new discharges of BCCs and will phase out the use of existing mixing zones in the Great Lakes over the next 10 years. The regulation will eliminate discharges of up to 700,000 toxic pounds-equivalent annually of BCCs, including mercury, dioxin, PCBs, chlordane, DDT, and mirex, as well as 16 other highly bioaccumulative chemicals. Mercury discharges alone will be reduced by up to 90 percent. Five Great Lakes States – Illinois, Indiana, Michigan, Minnesota, and Wisconsin – already prohibit mixing zones for bioaccumulative chemicals of concern in the Great Lakes Basin, although the mixing zone ban in Wisconsin currently applies only to new dischargers. Under the new rule, any Great Lakes State or Tribe that has not adopted BCC mixing zone provisions as protective as those in the rule (e.g., New York, Ohio, Pennsylvania) will have 18 months to adopt similar provisions prohibiting mixing zones.

Mercury-Free DC: USEPA and the District of Columbia, along with partners such as Health Care Without Harm, the District of Columbia Hospital Association, and other Washington, DC-area local governments, have begun a "Mercury-Free DC" initiative. This effort includes hospital mercury reduction pledges, thermometer exchanges, household hazardous waste collections, and technical assistance in mercury reduction for businesses.

New Hampshire Mercury Legislation: New Hampshire enacted mercury legislation which bans the sale of certain mercury-containing products, requires manufacturers to notify the State of the added mercury content of their products, bans the sale of mercury fever thermometers without a prescription, bans the use of mercury in grade schools, and restricts the sale and use of elemental mercury. The legislative effort was one recommendation of New Hampshire's Mercury Reduction Strategy which has also led to the organization of workgroups to address mercury emissions from utility boilers, mercury use in healthcare facilities, and mercury emissions from municipal waste combustors and to develop the recently drafted mercury Public Outreach Strategy.

ECOS National Mercury Workshop: A grant was issued to the Environmental Council of States (ECOS) for an "ECOS National Mercury Workshop" to inform state environmental commissioners and upper level agency managers about mercury issues. The workshop was held in the fall of 2000 and served as an opportunity for states to exchange information about their mercury reduction activities.

Monitoring

Ambient Mercury Monitoring: In September, 2000, the Indiana Department of Environmental Management signed a contract with the U.S. Geological Survey to monitor mercury in both wet and dry deposition at four sites throughout Indiana. Additional data will be collected for other metals and for methyl mercury. The course of this project will run over 2 years, with a potential renewal for an additional 2 years. The Michigan Great Lakes Protection Fund (GLPF) has funded the Michigan Department of Environmental Quality (MDEQ) and the University of Michigan to establish mercury monitoring at three urban sites and two rural sites. In addition, mercury levels in water, sediments, and biota will be measured at an impacted urban lake in southeast Michigan with assistance from MDEQ's Surface Water Quality Division.

Source Monitoring: Under EPA grants, Michigan, Wisconsin, Minnesota, Ohio, and Illinois are purchasing continuous elemental mercury vapor monitoring equipment for evaluating mercury emissions from a variety of sources. Through another EPA grant, Oak Ridge National Laboratory is providing assistance to States monitoring reactive gaseous mercury.

Progress Toward Challenge Goals

It is difficult to evaluate progress over the last year toward the goal of reducing mercury use and release by 50 percent nationally by 2006. The draft U.S. report on Mercury Sources and Regulations estimates that mercury emissions decreased approximately 25 percent between 1990 and 1995, and it is likely that reductions have continued, especially as the result of implementation of regulations on emissions from incinerators. Mercury use has been declining in the late 1990s, but progress over the last two years is difficult to gauge given changes in the sources of data about mercury consumption (see http://www.epa.gov/glnpo/bns/mercury/progress.html).

PCBs

Canadian workgroup co-chair: Hamish St. Rose
U.S. workgroup co-chair: Tony Martig

Workgroup Activities and the 4-Step Process

On October 2, 2000, a notice was published in the Federal Register announcing the availability of the PCB Step 3 report, entitled *Options for Reducing PCBs*, which was prepared in July, 2000, and which is posted on the GLBTS web site.

Reduction Activities

PCB Reduction Commitment Letters: Since the PCB workgroup's PCB Commitment Letters were mailed in late 1999, to the automotive and iron and steel sectors in Canada, all four steel companies and all three major domestic automobile manufacturers have returned their responses. In addition, over 30 municipal electrical power utilities in Ontario have signed on to the challenge.

PCB reduction commitments were obtained from the major U.S. automobile manufacturers (DaimlerChrysler, Ford, and General Motors). All three manufacturers committed to go beyond the PCB challenge and achieve 100% removal. GM has committed to remove 100% of its PCB transformers, and is working to phase out remaining PCBs located in items such as large and small capacitors and light ballasts. GM has not established a firm commitment date for the phaseout of these PCBs, but reports that all PCB transformers (by far the greatest bulk of the company's PCBs) will be eliminated by March 2001. In addition, Ispat Inland, a steel company, has committed to reduce high-level PCBs in electrical equipment oil by 95% by 2006. The company also committed to continue a program to remove PCB transformers and capacitors located in high-risk areas, and to retrofill PCB transformers with non-PCB fluids. Ispat is also embarking on a program to eliminate PCBs that are present in hydraulic systems in their plants.

The Council for Great Lakes Industries (CGLI) has been working with the PCB workgroup to identify the most effective ways to obtain commitments from its members. CGLI has agreed to forward the workgroup's PCB reduction commitment requests to its members.

U.S. PCB Phasedown Program: EPA met with representatives of nine of the major utilities serving the Great Lakes Basin to present the final provisions of the PCB Phasedown Program. This program is a pilot project in EPA Region 5 designed to obtain commitments from utilities to remove their remaining PCB transformers, capacitors, and voltage regulators. Under the pilot project, if a utility commits to remove its PCB equipment and self-disclose any potential violations of the PCB or TRI regulations, as an incentive, EPA would offer reductions to any penalty that may be assessed, up to 100% in some cases. EPA awarded $60,000 under RCRA to six Region 5 states to continue "Clean Sweeps" for PCBs and other Level I substances. EPA also began a nationwide inventory of PCB-containing equipment at federal facilities.

RCRA Enforcement: In FY2000, EPA issued orders for imminent hazard and corrective action to two facilities in Michigan where PCBs are present.

Survey of PCB In-Use Inventory: Canada has updated its inventory of in-use PCB equipment. In February, 2000, a letter and survey were mailed to approximately 500 registered owners of in-use PCB equipment in Ontario, requesting updated information, if applicable, and details on plans for decommissioning and destruction. To date, approximately 51% of owners have returned the survey and approximately 31% of those returning the survey have submitted information on future PCB management plans. A "Fact Sheet" is being prepared which will summarize the survey results.

Amendments to PCB Regulations Underway: Environment Canada's regulatory amendment process is underway, which proposes the strengthening of federal regulations regarding PCB management. The "Chlorobiphenyl Regulations" and "Storage of PCB Material Regulations" were promulgated in 1977 and 1992, respectively. Combined, these two regulations presently address management aspects including use, sale, manufacture, release, and storage of PCBs.

Highlights of the proposed amendments would strengthen current regulations as follows:

- PCB phase-out from sensitive sites
- Product content limit of 2 ppm (pigment)
- PCB storage time of 2 years
- Phase-out of all uses by 2008
- Prohibition against storage after 2010 for existing stored material

The public consultation/comment period closed on September 15, 2000. The amended regulation could be promulgated in the year 2001.

Equipment Photographs: The PCB workgroup began to collect photographs of electrical equipment which may contain PCBs (transformers, capacitors, fluorescent light ballasts, etc.) to help increase the awareness of the types of equipment that may contain PCBs and to help demonstrate what this equipment looks like. So far, numerous photographs have been obtained from the UN, and these will soon be posted and labeled on the GLBTS PCB website. The workgroup plans to continue seeking photographs to post on the website until a thorough sample of PCB-containing equipment is developed.

Progress Toward Challenge Goals

Canada: To date, approximately 70% of high-level PCB wastes have been destroyed, up from approximately 40% from Spring 1998 when work in support of the GLBTS commenced. Further, approximately 25% of low-level PCB wastes have been destroyed (a large portion of the remaining low-level waste is soil from a contaminated site clean-up, stored in an engineered containment facility). It is expected that strong progress toward the target (90 percent reduction of high-level PCB waste) will be sustained. Awareness among owners continues to increase, options available for destruction have increased over the past 2 years, and owners of large quantities have been able to incorporate PCB phase-out/destruction into multi-year operating plans.

U.S.: EPA still expects that the U.S. challenge (90 percent reduction nationally of high-level PCBs (> 500 ppm) used in electrical equipment) will be met by 2006. The 1999 PCB Transformer Registration Database shows that there are approximately 20,000 PCB transformers currently registered and in use in the U.S. Reductions of PCB transformers and capacitors in existing equipment continue to occur. General Motors will have eliminated all PCB transformers in the U.S. and Canada by the end of the first quarter of 2001.

Dioxins/Furans

Canadian workgroup co-chair: Sandro Leonardelli
U.S. workgroup co-chair: Nan Gowda

Workgroup Activities and the 4-Step Process

The dioxin workgroup has been very active in the past year. Highlights of this activity include the following:

- A total of seven conference calls were held approximately once a month between December 1999 and September 2000. At the conference calls, workgroup members and sector experts developed and implemented a decision tree process to assess major dioxin/furan source sectors and assign them a GLBTS priority level for workgroup focus. The workgroup is currently in the process of developing detailed plans for implementing reduction projects for sectors designated a high or medium GLBTS priority.
- The workgroup met at the Binational Toxics Strategy Stakeholder Forum in Toronto, Ontario, on May 16, 2000.
- In February, 2000, the workgroup decided to form a Burn Barrel subgroup. This subgroup was initiated with a conference call in April 2000, and four subsequent conference calls were held. Recent subgroup efforts have centered on developing a Burn Barrel Strategy document, characterizing State and local regulatory frameworks, and conducting a survey of open burning practices in Ontario.
- A draft U.S. GLBTS Step 1&2: Dioxins and Furans Sources and Regulations report was prepared in May 2000.
- Following the June 2000 public release of the Dioxin Reassessment draft documents for external scientific review, an addendum to the draft Sources and Regulations report was prepared in August 2000.
- A GLBTS Step 3 Dioxins and Furans Reduction Options report was prepared in September 2000.
- The GLBTS Step 1&2 and Step 3 reports were posted on the Binational Toxics Strategy web page on September 29, 2000, and public comments are being solicited.

Reduction Activities

United States

- In June 2000, the U.S. Dioxin Reassessment draft documents for external scientific review were publicly released and made available on the USEPA website.
- In September 2000, the U.S. Dioxin Reassessment Draft Documents for EPA's Scientific Advisory Board (SAB) review were publicly released and made available on the USEPA website.
- The new TRI reporting thresholds for dioxins became effective on January 1, 2000.
- USEPA and EC are jointly evaluating pentachlorophenol (PCP), which contains dioxins/furans impurities, for re-registration.

- The compliance deadline for a 1995 "Maximum Achievable Control Technology" (MACT) regulation for large municipal waste combustors (MWC) is December 2000. A MACT standard for small MWCs has been proposed (1999). EPA estimates that full compliance by all MWCs with the 1995 standards and the proposed 1999 standards will result in annual emissions of about 12 g I-TEQ_{DF}/year, compared to 1995 estimated MWC emissions of 1,100 g I-TEQ_{DF}/year (U.S. Dioxin Reassessment Draft Documents for SAB review).
- A grant was provided to the Western Lake Superior Sanitary District (WLSSD) to work collaboratively on a regional basis to help communities minimize open barrel burning to reduce dioxin emissions. Lessons learned from this project will be transferred to other communities.

Canada

- Canada Wide Standards (release limits) are being developed for dioxins/furans.
- Recommendations from two Strategic Option Reports for the Canadian iron and steel and wood preserving sectors are in place. Audits against the Codes of Good Practice have been conducted for all PCP wood preservation facilities in Ontario. A report with recommendations is expected by March 2001. Codes of Practice for the iron and steel sector are being finalized for implementation by Ontario steel mills.
- The Canadian (Draft Second Edition) National Inventory of Releases of Dioxins and Furans has been released for public consultation and is posted on the Environment Canada webpage.
- Two Ontario utilities eliminated the use of PCP in wood-treated poles.
- Testing of conventional and EPA-certified wood stoves is being conducted in Canada to investigate releases from the two types of stoves, including dioxins/furans and their relationship with particulate matter.
- To date, two Canadian steel manufacturing facilities that use Electric Arc Furnace (EAF) technology volunteered to conduct stack emission testing to help evaluate the significance of this sector as a source of dioxins/furans. Dofasco has completed testing, and results of testing at Gerdau Courtice are currently under review.
- EC announced that Falconbridge, a base metals smelting facility near Timmins, Ontario, and the Toronto Sick Kids Hospital have volunteered to conduct stack testing under the Volunteer Stack Test Program. The testing is currently in the planning stages.

Progress Toward Challenge Goals

Based on the 1998 Draft Inventory, the United States is clearly on track to meet the GLBTS challenge goal by 2006 (a 75 percent reduction in total releases of dioxin and furans). Additional reductions are expected as full compliance with existing and scheduled regulations on dioxin releases are met. A quantitative estimate of where the U.S. stands with regard to the challenge goal may depend upon new information that is included in the Final U.S. Dioxin Inventory.

Canada has made significant progress toward meeting the goal of a 90% reduction in releases of dioxins and furans, achieving a 76% reduction, relative to the 1988 Canadian baseline. Much of

the reductions achieved are attributable to the pulp and paper sector after federal regulations were imposed.

Concerns, Challenges, and Next Steps

One of the primary concerns of the dioxin/furan workgroup has been the issue of limited resources and the resulting need to prioritize sources for workgroup reduction efforts. To address this concern, the dioxin workgroup developed a decision tree process for sector analysis. This past year, the workgroup has used the decision tree process to systematically evaluate the major sources of dioxin emissions in the Great Lakes region and assign each sector a GLBTS priority level.

As a result of this process, the workgroup has designated four sectors for initial priority focus in pursuing the GLBTS goal of achieving additional reductions in anthropogenic sources of dioxin emissions in the Great Lakes basin. These sectors include medical waste incineration (in Canada only), backyard trash/open burning, residential wood combustion, and PCP-treated wood (in the U.S. only). The workgroup did not assign a priority level to steel manufacturing (EAF) in the U.S., secondary copper smelting in Canada, or landfill fires in either country due to insufficient data available to fully characterize the significance of these sources in the Great Lakes basin. Priority will be given to collect information for these sectors.

Sectors not designated for priority focus at this time were identified as already having sufficient activities in place to address dioxins/furans, and/or data to show that dioxins/furans were not substances of concern for the sector. For example, municipal waste combustors and medical waste incinerators were not designated high priority in the U.S. due to effective MACT emissions controls that are already in place and a lack of opportunities for further reduction; however, the need for better information on ash management from municipal and medical waste incineration was identified as a follow-up issue for the workgroup. Therefore, next steps for the workgroup will be to continue to develop detailed plans for implementing reduction projects for those sectors designated high or medium priority, to conduct information gathering efforts where necessary, and to encourage coordination of activities and sector-based approaches where applicable. These reduction plans will be implemented as Step 4 of the GLBTS analytical process: Implementing actions to work toward the goal of virtual elimination.

Hexachlorobenzene/Benzo(a)pyrene

Canadian workgroup co-chair: Tom Tseng
U.S. workgroup co-chair: Steve Rosenthal

Workgroup Activities and the 4-Step Process

In the past year, the workgroup has made the following progress with respect to the 4-Step process:

- A notice of availability of U.S. HCB and B(a)P Step 3 reports, *Draft Report of Hexachlorobenzene (HCB) Reduction Options* and *Draft Report of Benzo(a)pyrene (B(a)P) Reduction Options,* was published in the Federal Register on October 2, 2000. These reports describe options for reducing HCB and B(a)P emissions from the major emitters of these pollutants. The U.S. HCB and B(a)P Step 3 reports are posted on the GLBTS web site.
- The draft U.S. Steps 1&2 reports, *Hexachlorobenzene (HCB): Sources and Regulations* and *Benzo(a)pyrene (B(a)P): Sources and Regulations*, were revised and distributed to the workgroup at the May 2000 Stakeholder Forum.
- USEPA's 1996 National Toxics Inventory was released in September, 2000. This inventory is especially significant because it was prepared using a "bottom-up" approach in which the States determined emission levels from sources located within their boundaries using a common set of emission factors that were used by all States.
- In light of the recent release of USEPA's 1996 National Toxics Inventory and the difference in HCB emission source categories from previous inventories, an addendum to the U.S. Steps 1&2 report for HCB is being drafted.
- Draft HCB and B(a)P (including polycyclic aromatic hydrocarbons, or PAHs) release inventories for Ontario have been updated and circulated to the Council of Great Lakes Industries (CGLI) for a preliminary review. The draft documents are presently being circulated to workgroup members for review and input.
- USEPA reported in a Federal Register notice (Vol. 65, No. 150) on August 3, 2000, that it now estimates that there are no HCB emissions from tire production manufacturing, based on additional testing performed by the Rubber Manufacturers Association.
- Reporting requirements to Canada's National Pollution Release Inventory have been revised to include micro-pollutants. Canada will receive HCB and B(a)P release reports beginning in June, 2001; this information will improve Ontario release profiles for B(a)P and HCB, as well as other substances.
- Two Ontario facilities thus far have responded to the call for voluntary stack testing (base-metal smelter and hospital incinerator). Arrangements for the testing will be finalized soon, and testing is anticipated to be completed by Spring, 2001. Outreach to other facilities continues.
- Two workgroup meetings were held (Chicago, November 1999 and Toronto, May 2000), and a teleconference (September 2000) was held to discuss comments on emission inventories.

Reduction Activities

- The Spring 2000 Pilot Project for the Great Lakes Great Stove Changeout was a success. Coordinated by the Hearth Products Association and the Michigan Office of the Great Lakes (part of the Michigan Department of Environmental Quality), the pilot project was held in the Traverse City, Michigan, and Green Bay, Wisconsin, areas (both locations included about 10 to 20 surrounding counties). B(a)P was covered in four television stories, numerous local print stories, an Associated Press story, and on several local National Public Radio stations in Wisconsin and Michigan. Over 100 old woodstoves were retrieved, scrapped, and replaced by EPA-certified woodstoves or gas appliances. Two dealers in the Traverse City/Cadillac area were responsible for 42 units. The particular success of that program reflected several factors: a large number of woodburning households, committed retailers, and especially the support of the Grand Traverse Bay Watershed Initiative and the Michigan Office of the Great Lakes. The Hearth Products Association is planning to extend this program to portions of all of the Great Lakes States in 2001. The program will kick off in February and run until the end of April. A similar Wood Stove Changeout program has been implemented in Eastern Ontario with the Hearth Products Association of Canada, and this pilot program will be expanded to other parts of Canada during February-March 2001.
- A pilot project is being implemented with Algoma Steel (a major Ontario steel mill) to develop a facility-based approach to addressing environmental priorities. The project is similar to an Environmental Management Agreement (EMA) signed by Dofasco and is expected to bring about significant reductions of priority substances. The EMA has been finalized and is expected to be signed by Algoma Steel soon.
- Under RCRA, EPA issued a final order to a facility in Romulus, Michigan, with penalties for releases of HCB and/or B(a)P.
- Ontario has implemented an effective scrap tire management program to minimize environmental liabilities. Scrap tire program managers for the Great Lakes States and the (U.S.) Scrap Tire Management Council were contacted to learn how each state is handling its scrap tires and the potential ways that accidental fires can be minimized. Millions of scrap tires burned in several catastrophic U.S. fires in 1999. The more than 500 million scrap tires accumulated in stockpiles throughout the U.S. are a potential threat to human health and the environment. Tire fires are typically caused by wildfires, lightning strikes, and arson. These fires are nearly impossible to extinguish and can burn for months, generating considerable air emissions of B(a)P/PAHs as well as groundwater contamination and oily runoff.
- Canada Wide Standards (release limits) have been developed for mercury, particulate matter, particulates, ozone, and benzene, and are being developed for dioxins and furans. Implementation of CWS by the major source sectors and the Province of Ontario is expected to bring about HCB and B(a)P release reductions in the next 5 to 15 years.

- Recommendations from two Strategic Option Reports for the Canadian iron and steel and wood preserving sectors are in place. Audits against the Codes of Good Practice have been conducted for all three pentachlorophenol (PCP) and creosote wood preservation facilities in Ontario. A report with recommendations is expected by March 2001. Codes of Practice for the iron and steel sector are being finalized for implementation by Ontario steel mills.

Progress Toward Challenge Goals

The U.S. has taken steps toward the goal of seeking (unquantified) reductions in HCB and B(a)P releases to the Great Lakes basin. Canada has made progress toward its goal of a 90 percent reduction in releases of HCB and B(a)P in the Great Lakes Basin. Approximate reductions based on the latest emission inventory estimates (base year ~1988) are as follows:

	Canada	U.S.
HCB	60-90%	90% from pesticides and chlorinated solvent production
B(a)P	30-40%	65% from coke ovens

Concerns, Challenges, and Next Steps

Remaining challenges are to fill emission data gaps and to obtain voluntary emissions reductions from major source sectors. The workgroup's focus in the coming year will be to review the latest emission inventory estimates and undertake a decision-tree analysis to further identify sectors and facilities for reduction activities.

Octachlorostyrene

Canadian workgroup co-chair: Darryl Hogg
U.S. workgroup co-chair: Frank Anscombe

Workgroup Activities and the 4-Step Process

United States
A *Draft Great Lakes Binational Toxics Strategy Octachlorostyrene (OCS) Report: Stage 3* was distributed to the Integration Group at the September 22, 2000, meeting and was sent by email to OCS workgroup members. This Stage 3 report addresses stakeholder comments received in response to the *Draft Great Lakes Binational Toxics Strategy Octachlorostyrene (OCS) Report: A Review of Potential Sources*.

Canada
In June 2000, Environment Canada updated and made available to interested stakeholders its GLBTS Stage 1 and 2 report *Octachlorostyrene Sources, Regulations and Programs for the Province of Ontario 1988, 1998 and 2000.* The report concludes that there are no documented OCS releases being reported on the Canadian side of the Great Lakes basin, but identifies potential sources where testing is required in order to confirm that releases do not exist. Work is now underway with several facilities that have indicated a willingness to become involved in a voluntary Environment Canada air testing initiative to help fill data gaps on releases of GLBTS substances, including OCS.

Concerns, Challenges, and Next Steps

EC and EPA will co-sponsor a binational meeting on best management practices for preventing environmental releases of chlorinated hydrocarbons during electrolytic production of metallic magnesium. The production of magnesium has historically been known to emit OCS, HCB, and dioxin, which have the potential to enter the Great Lakes through atmospheric transport. On October 3, 2000, EPA Region 8 announced a consent order with Magnesium Corporation of America (Rowley, Utah) to evaluate its site for the presence of dioxin and hexachlorobenzene, which could lead to cleanup of appropriate areas and, by May 2002, to fundamental process changes to reduce formation of these compounds. A press release and the consent order can both be found at www.epa.gov/region8.

Other than obtaining additional environmental monitoring data, which can be used to assess the need for further action, future OCS reduction efforts will be linked to reduction efforts focused on HCB and/or dioxin.

Pesticides

Canadian workgroup co-chair: Rui Fonseca (succeeding Elizabeth Rezek)
U.S. workgroup co-chair: Dave Macarus

Workgroup Activities and the 4-Step Process

Meetings and Activities: Rui Fonseca will be taking over the Pesticides co-lead role for Canada, replacing Elizabeth Rezek, who has been an excellent partner and who will be missed. Elizabeth will oversee the transition. Rui Fonseca can be reached at (416) 739-5866 or by e-mail at **Rui.Fonseca@ec.gc.ca**.

The workgroup has essentially worked its way through the 4-step process. Regulations are in place to discontinue the use of and control releases of the Level I pesticides. In addition, these pesticides are no longer manufactured in the U.S. or Canada. There are some on-going activities with Level I pesticides, such as the Clean Sweeps program, which are described below. The workgroup has reviewed the Level II pesticides and discussed where to lend support to current initiatives. At the May 16, 2000, Stakeholder Forum, the pesticides workgroup decided that the next scheduled meeting of the workgroup would be November 2001, following the release of the joint (U.S. and Canada) review of reregistration of pentachlorophenol for wood treating applications. However, the workgroup may arrange earlier meetings, if issues arise. The workgroup chairs will also continue to provide updates at the plenary sessions of Stakeholder meetings.

Reduction Activities

Waste Pesticide Collections

- The EPA Region 5 Waste, Pesticides and Toxics Division is planning to offer $60,000 to each Region 5 State to support clean sweep activities targeting PBT wastes. These funds will come from the RCRA program source, and add to the emphasis that the pesticide programs have provided through FIFRA discretionary funds.
- The Michigan Department of Agriculture has recently reported data from clean sweep collection programs for 1997 through 1999. This information has not previously been reported. For the 3-year period, 4,995 lbs of PBTs have been collected; this includes 2,750 lbs of Level I pesticides, 2,049 lbs of Level II pesticides, and 196 lbs of other PBT substances. Since all of Michigan is in the Great Lakes Basin, these quantities directly assist the Binational Toxics Strategy.
- The Illinois Department of Agriculture reported clean sweep collections of 4,177 lbs of PBT pesticides in 1999. Collections covered both agricultural and structural sources. The total includes 3,402 lbs of Level I pesticides and 775 lbs of Level II pesticides. Although most of Illinois is not in the Great Lakes drainage basin, these quantities could have contributed to atmospheric transport and deposition in the Great Lakes, had they been released.

- In August, the Ontario Ministry of Agriculture and Rural Affairs announced a program under the Healthy Futures initiative and in collaboration with the Crop Protection Institute of Canada to eliminate the potential health and environmental risks posed by old pesticides which have accumulated on Ontario farms. This November, 35 different sites in southern and south-western Ontario will be able to return, at no cost, outdated, unusable or no longer registered pesticides. Collection will occur in 2001 for eastern and northern Ontario.

Toxaphene Remediation of Landfills at Brunswick, Georgia

The remediation of the toxaphene spoils from landfills and sediments from the former Hercules manufacturing site in Brunswick, Georgia, continues. Local environmental groups are concerned that the air drying process vaporizes some of the toxaphene components, which impacts the health of local residents and provides input for potential atmospheric transport to the Great Lakes. The Pesticides workgroup is pursuing clarification and technical information through the National PBT Workgroup and the Superfund Program.

Level II Pesticides

Phase-out of Tributyl Tin Anti-fouling Paints

Health Canada and the U.S. Office of Pesticide Programs participated in a conference call to discuss a joint phase-out of tributyl tin (TBT) compounds. It is hoped that a joint phase-out can be finalized to coincide with the International Maritime Organization treaty to ban TBT in 2003.

U.S. - Canada Harmonization of Pesticide-Treated Seed Policies

Ultimately, it is hoped to have uniform registration standards for the two countries. This has bearing on the Binational Strategy in that lindane and other PBT pesticides are used in seed protectant products. Canada and the U.S. have developed plans for the phase-out of lindane. In another development on lindane, California will prohibit the sale and use of lindane for the pharmaceutical treatment of lice and scabies beginning January 1, 2002.

Pentachlorophenol

Pentachlorophenol is undergoing a joint reevaluation/reregistration review by the Pest Management Regulatory Agency and USEPA. The review is expected to be completed in the fall of 2001.

All pentachlorophenol-treating facilities in Ontario, Canada, have been assessed by a third party against the Technical Recommendations outlined in the Wood Preservation Sector Strategic Options Report. Facilities not meeting all of the Technical Recommendations are expected to produce an implementation plan by the end of June 2001 to meet all applicable recommendations.

In addition to work with the wood treaters, users and waste management areas are also addressed by the Wood Preservation Sector Strategic Options Report. Users will be given training and outreach on the "Industrial Treated Wood Management System User Guideline" once finalized later this year. A working group has been established to document technical options and barriers to waste management by December 2001, and a National Waste Management Strategy should be completed by June 2001.

Progress Toward Challenge Goals

The Canadian Challenge report was issued in 1997, concluding that the Challenge for Canada has been met.

The final U.S. Challenge report was posted on the GLBTS web site on September 29, 2000. The report concludes that the U.S. has met the principal intent of the Challenge, even though the goal of confirming that there is "no longer use or release" cannot be attained as long as unused stocks and contaminated sites exist.

Alkyl-Lead

Canadian workgroup co-chair: Elizabeth Rezek
U.S. workgroup co-chair: Tony Kizlauskas

Workgroup Activities and the 4-Step Process

United States
Following incorporation of comments received during the public comment period, a final report on Steps 1, 2, and 3 of the 4-Step process was posted in June, 2000 to the Binational Toxics Strategy's web site. The report is entitled *Great Lakes Binational Toxics Strategy Report on Alkyl-Lead: Sources, Regulations, and Options*.

USEPA's Draft National Action Plan for Alkyl-Lead was released on August 25, 2000, for public comment. The public comment period ended on September 25, 2000. The Draft National Action Plan closely parallels the GLBTS Alkyl-Lead Work Group U.S. Steps 1, 2, and 3 Report, and will be the primary mechanism for implementing further reductions in alkyl-lead in the United States.

Canada
Steps 1 to 4 were incorporated into a report entitled *Alkyl-lead an Inventory Study: Sources, Uses, and Releases in Ontario* that was released in the Spring of 1999 and is available on the GLBTS website. The report confirms that Canada has exceeded its challenge to meet 90% reduction in the use, generation, and release of alkyl-lead.

Progress Toward Challenge Goals

United States

The U.S. has met the strategy challenge of confirming no-use of alkyl-lead in automotive gasoline. Following incorporation of public comments, a final challenge report, entitled *U.S. Challenge on Alkyl-Lead: Report on Use of Alkyl-Lead in Automotive Gasoline*, was made available in June 2000 on the GLBTS website.

The remaining portion of the U.S. strategy challenge, "Support and encourage stakeholder efforts to reduce alkyl-lead releases from other sources," has been incorporated into the USEPA's Draft National Action Plan for Alkyl-Lead. In response to the Draft National Action Plan for Alkyl-Lead, representatives of the U.S. automotive racing sector have expressed interest in working with USEPA to find substitutes for leaded racing gasoline.

Canada

Canada has met the challenge to reduce by 90% the use, generation, and release of alkyl-lead. Sources, uses, and releases of alkyl-lead in Ontario decreased over 98% from 1988 to 1997. The two primary remaining sources of alkyl-lead in Ontario are aviation gasoline (avgas) and leaded motor gasoline for use in competition vehicles. In 1997, relative to total motor gasoline, aviation gasoline and leaded motor gasoline comprised only 0.2% and 0.05%, respectively, of Ontario's gasoline mix.

Concerns, Challenges, and Next Steps

The USEPA National PBT Strategy has taken a leadership role in the United States for implementing the actions outlined in the National Action Plan for Alkyl-Lead, and therefore the remaining U.S. GLBTS alkyl-lead challenge. This includes coordination of stakeholder efforts to reduce any remaining alkyl-lead releases.

A challenge in achieving further reductions in the aviation sector is the lack of safe alternatives to replace alkyl-lead in aviation fuel. Research is underway in the United States, but developing an acceptable alternative is likely to take another 8 to 10 years.

The report *Alkyl-lead an Inventory Study: Sources, Uses, and Releases in Ontario* encountered information gaps in the use of alkyl-lead in the aviation sector and recommended follow-up through a study of airborne concentrations of lead around a high traffic piston-engine aircraft airport. Environment Canada undertook such a study over a 10-day period this Spring. The final report has been completed and will be posted on the GLBTS website. The study concluded that the use of avgas at the airport was correlated with elevated airborne lead levels, although all levels were below applicable standards and guidelines.

Competition vehicles in Canada are currently exempted from the Canadian Gasoline Regulations, which ban lead in fuel. The exemption for competition vehicles expires in December, 2002. Prior to the expiration of the exemption, consultations will be held with the competition sector. The consultations will be coordinated with parallel U.S. efforts.

Workshop on Life Cycle Analysis of Municipal Solid Waste: A workshop was held in Toronto on May 15, 2000, for the Binational Toxics Strategy to illustrate how life-cycle management can be used as a tool to help evaluate the environmental tradeoffs associated with reducing toxics through integrated waste management. A decision support tool was applied to analyze strategies for the management of municipal solid waste for four scenarios involving a community in Wisconsin. These scenarios were selected to span the range of potential options of integrated waste management. The results were used to demonstrate how environmental tradeoffs can vary for toxics as well as for other non-toxic pollutants including greenhouse gas emissions, acid gases, ozone precursors, and waterborne pollutants. Full costs associated with the different strategies were also provided for each scenario. The decision support tool and information used were developed under a cooperative agreement with the Research Triangle Institute, North Carolina State University, Franklin Associates, and Roy F. Weston.

Over 100 participants in five afternoon breakout sessions were involved in evaluating the data and information and in illustrating the potential environmental tradeoffs and complexities of decision making. The feedback that was received will be used to help identify potential improvements to the decision support tool, presentation of results, and needs for emissions characterization data for toxics. One of the major issues is how to present life-cycle inventory data that distinguish between "local" and "global" pollutants.

The decision support tool can be a valuable aid in helping to clarify potential toxics associated with integrated waste management practices that may impact the Great Lakes. In addition, using inventory data on other toxic pollutants allows decision makers to gain a better understanding of the contribution of integrated waste management practices as compared to other sources of toxic pollutants.

Communications Strategy: A communications strategy was prepared that addresses outreach to prevent the introduction of persistent toxics into the environment and presents ideas for partnership building. Outreach activities were identified for implementation. Communications materials were prepared to increase awareness of the GLBTS.

Partnering with Industry: An award was given to the Council of Great Lakes Industries (CGLI) to refine the Great Lakes Binational Toxics Strategy consultation process so that it is just and inclusive and to disseminate information on the implementation of the GLBTS through CGLI newsletters and bulletins. CGLI will also seek to obtain voluntary commitments from industry to undergo stack testing for GLBTS substances.

Extended Producer Responsibility Workshop: An award was given to Great Lakes United to organize, promote and deliver a one day workshop on the concepts and methodologies of "Extended Producer Responsibilities".

Partnering with Industrial Boilers: A grant was awarded to the Delta Institute to form a partnership with the Council of Industrial Boilers and to work with this industry to develop ways of boosting energy efficiency and cutting toxic chemical use and discharge. The effort is a collaboration with the U.S. Department of Energy. Critical substances targeted include mercury, cadmium, PCBs, dioxin/furans, and hexachlorobenzene.

Computer Recycling Project: A grant was issued to Erie County, New York, to conduct the "Erie County Pilot Computer Recycling Project." This project will utilize the existing Erie County staff and program format to implement a collection of computers at two collection events. It is anticipated that the proposed computer collections will divert 200-500 computers from the municipal waste stream. Critical substances targeted include lead, mercury, and cadmium.

Green Purchasing: A grant to INFORM, Inc. for a "PBT-Free Purchasing Project" focuses on working with government agencies at the state level to minimize procurement of products that contain persistent, bioaccumulative, and toxic substances. Heavy metals, including mercury and cadmium, are targeted.

Sediments Challenge Update

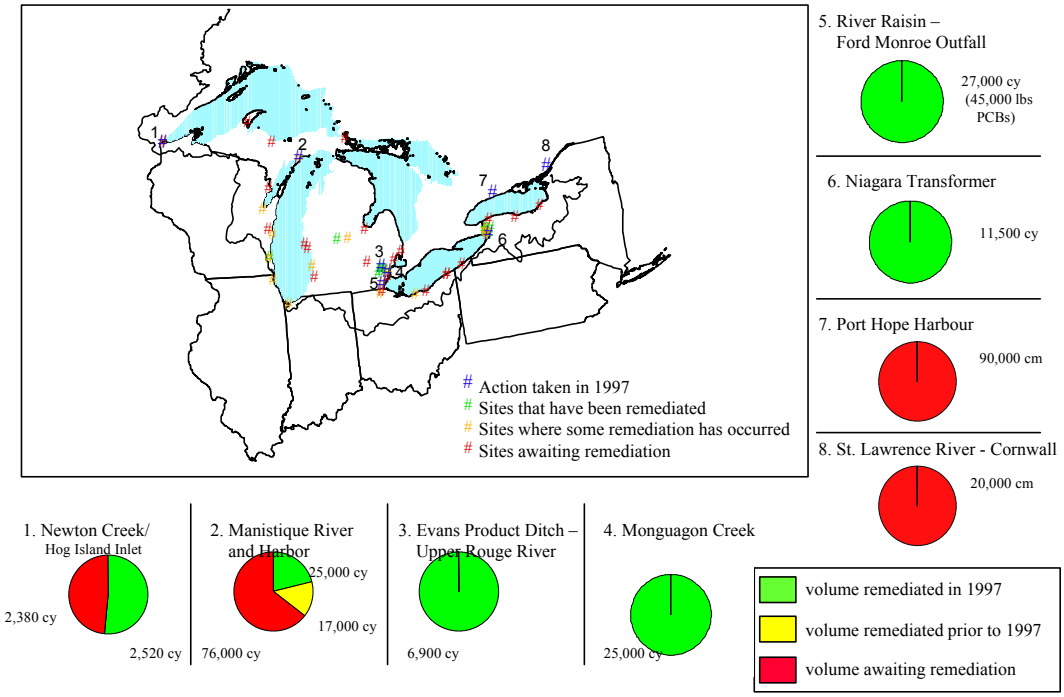
EPA and EC first presented a draft sediment reporting format to the Integration Group at the February 15, 2000, meeting. The proposed reporting format was also presented at the May 16, 2000, Stakeholder meeting. The purpose of the proposed format is to track sediment remediation activities occurring in the Great Lakes Basin. Example maps depicting the status of some contaminated sites in Canada and the United States were presented to the Integration Group. Preliminary maps, beginning with the baseline year 1997, are presented on the following pages. The maps, along with details on various sites, will provide a quick, concise, easy way to demonstrate progress the parties have been making. The parties will also attempt to track volumes of contaminated sediments removed in a given year, as well as the mass of GLBTS substances associated with those volumes. Table 1 presents a draft format for reporting progress on sediment remediation in the Great Lakes.

The format builds upon the binational summary of sediment management actions taken in the Great Lakes, found in Table C of the Water Quality Board document, *Overcoming Obstacles to Sediment Remediation in the Great Lakes Basin: White Paper by the Sediment Action priority Committee*, produced in 1997. This establishes 1997 as the base year for reporting under the Binational Toxics Strategy.

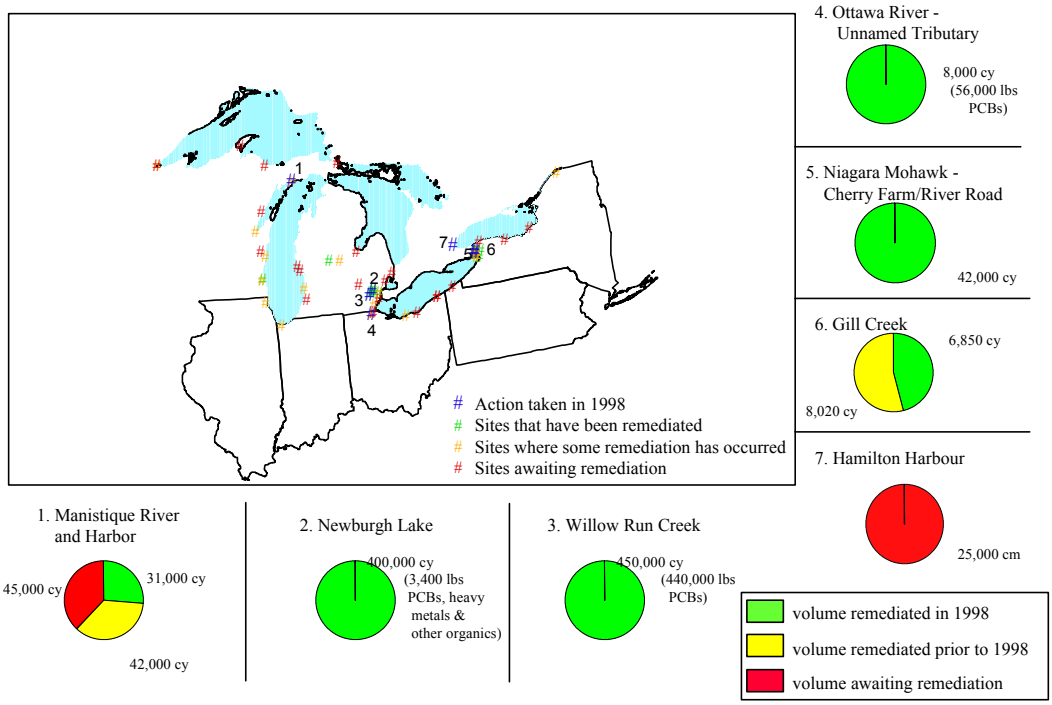
EPA and EC have also committed to sponsoring a contaminated sediment technology workshop early in 2001. A draft workshop agenda was presented to the Integration Group at its September 22, 2000, meeting. The workshop, "Removing and Treating Great Lakes Contaminated Sediment," will focus on contaminated sediment technologies along with case studies and

demonstration projects. Topics to be covered include: removal and treatment technologies; sediment clean-up; physical treatment (e.g., thermal destruction); biological treatment; sediment re-use; and ecological and economic benefits of sediment remediation.

Great Lakes Sediment Remediations in FY 1997



Great Lakes Sediment Remediations in FY 1998



Great Lakes Sediment Remediations in FY 1999

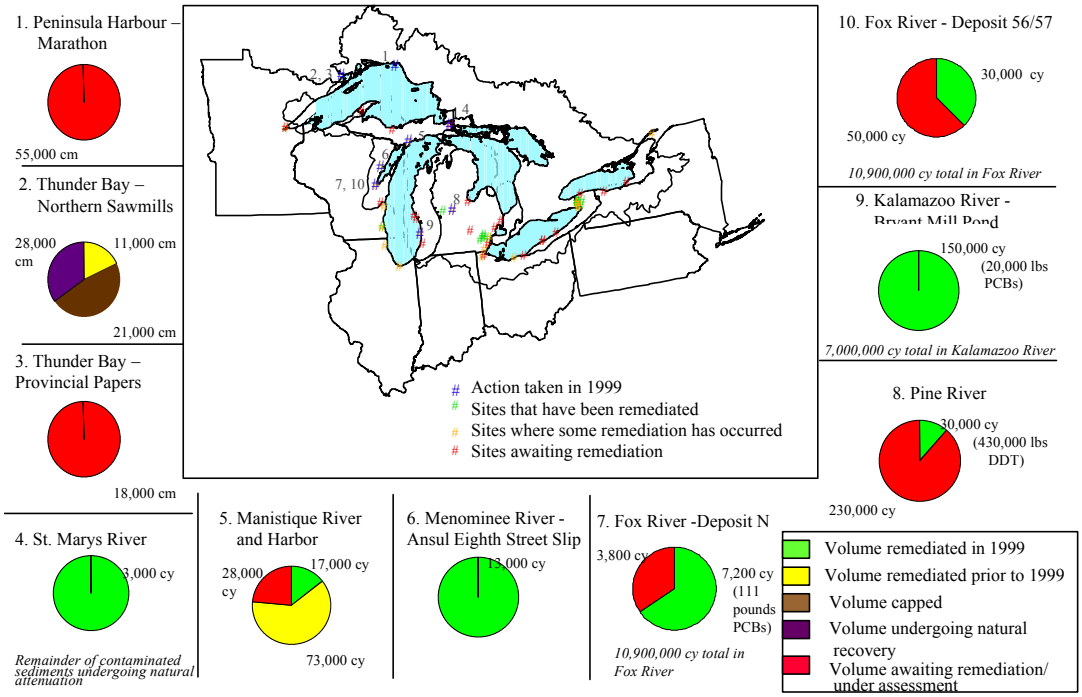


Table 1. Binational Strategy Proposed Sediment Reporting Format: Progress on Sediment Remediation in the Great Lakes

Site/Area of Concern (AOC)	**GLBTS Substances Present** aldrin/dieldrin; benzo(a)pyrene; chlordane; DDT (+DDD+DDE); hexaclorobenzene; alkyl-lead; mercury and compounds; mirex; octachlorostyrene; PCBs; PCDD (Dioxins) and PCDF (Furans); toxaphene		**Progress Made Since April 1997** (cubic yards/meters removed; pounds/kilograms of contaminant removed)		
Ashtabula River, Ohio					
Black River, Ohio					
Buffalo River, NY					
Clinton River, Michigan					
Cuyahoga River, Ohio					
Deer Lake-Carp River, Michigan					
Detroit River, Michigan					
Eighteen Mile Creek, New York					
Fox River/Green Bay, Wisconsin					
Grand Calumet, Indiana					
Kalamazoo River, Michigan					
Manistique River, Michigan					
Maumee River, Ohio					
Menominee River, Mich/Wisconsin					
Milwaukee Harbor, Wisconsin					
Muskegon Lake, Michigan					
Niagara River, New York					
Presque Isle Bay, PA					
River Raisin, Michigan					
Rochester Embayment, New York					
Rouge River, Michigan					
Saginaw River/Bay, Michigan					
Sheboygan Harbor, Wisconsin					
St. Clair River, Michigan					
St. Lawrence River, New York					
St. Louis River/Bay, Minn/Wisconsin					
Torch Lake, Michigan					
Waukegan Harbor, Illinois					
White Lake, Michigan					

Summary of Sediment Issues In Areas of Concern (AOCs)

St. Lawrence River (Cornwall): St. Lawrence River bottom sediment is contaminated with mercury, copper, and lead in three zones along the Cornwall waterfront. Mercury concentrations in sediment from these areas decreased from the 1970s to the 1990s, likely in response to reductions in local discharges and the replacement of shore-based discharges with off-shore diffusers. The total volume of contaminated sediment is estimated at 20,000 cubic meters. Sediment remediation is under assessment, and the parties have agreed to develop a sediment management strategy for the Cornwall waterfront.

Bay of Quinte: The Bay of Quinte is located on the north shore of Lake Ontario, 135 kilometers east of Toronto. The bay is Z-shaped and about 100 kilometers long. Dredging of bay sediment is restricted because some heavy metals exceed Province of Ontario dredge spoil disposal guidelines for open waters. The Bay of Quinte Remedial Action Plan (RAP) recommended that remediation of the bay's sediment be left to natural processes.

Port Hope Harbour: Port Hope Harbour is located at the mouth of the Ganasaska River on the north shore of Lake Ontario (approximately 100 kilometers east of Toronto). Approximately 90,000 cubic meters of sediment are located in the turning basin and west slip areas of the harbour. The sediment is contaminated by uranium and thorium series radionuclides, heavy metals, and PCBs. Any dredged material will have to be placed in a Government of Canada licensed low-level radioactive waste disposal facility. Sediment remedial options are under assessment.

Metro Toronto & Region: The Remedial Action Plan (RAP) report – *Clean Waters, Clear Choices* – target is that suspended, transported, and in-place sediment contain levels of contaminants at or below the Provincial Sediment Quality Guidelines. The report also concludes that the knowledge of the distribution of contaminants in Toronto Harbour sediment is incomplete and the details of transport mechanisms require further investigation. Sediment quality around key pollution sources also needs clearer definition. As a result of ongoing studies, it is anticipated that it will be possible to develop a detailed map of sediment in the Toronto waterfront. The map will serve as a guide for future remedial measures, and a baseline against progress can be judged.

Hamilton Harbour: The amounts and concentrations of heavy metals, PAHs, and PCBs in the Harbour are the result of discharges over several decades from the iron and steel industry in the Harbour. The Harbour is considered an excellent sediment trap, retaining about 85 percent of all suspended sediment discharged into it. Priority has been given to establishing standards, dredging techniques, risk analysis, and treatment technology for an area called Randle Reef. PAH concentrations are of greatest concern. Approximately 25,000 cubic meters of contaminated sediment in this area are under assessment for removal and treatment.

Niagara River: The Canadian Niagara River RAP has identified the lower Welland River as the priority focus of sediment assessment work. A full-scale cleanup, within a portion of the lower Welland river, has been carried out.

Wheatley Harbour: Wheatley Harbour is located on the northwestern shore of Lake Erie. Historically, industrial discharges to the harbour contained PCBs. Improved wastewater treatment at local fish processing plants effectively removed PCBs from their discharges. PCB-contaminated sediments in the harbour are being land disposed during dredging operations.

Detroit River: The Detroit River is 32 miles long, linking Lake St. Clair and the upper Great Lakes to Lake Erie. The binational RAP established a Contaminants Sediments Technical Workgroup to address contaminated sediment issues and devise a strategy for their remediation. Both the State of Michigan and the Province of Ontario have ongoing sediment investigations to identify hotspots in the Detroit River.

Severn Sound: Severn Sound is a group of bays in southwest Georgian Bay, Ontario. Sediment bioassays have shown little sublethal toxicity. Extensive sediment clean-up is not warranted. However, since metals in sediment from Severn Sound are potentially available for transfer into the food web, the RAP recommended source control and natural sediment recovery.

Spanish Harbour: Spanish Harbour is located in the North Channel of Lake Huron. Many of the impacts from historic log-driving operations and discharges from the pulp and paper mill at Espanola have been remediated. Sediment contamination from heavy metals still exists; the bioavailability of these metals, however, is low. Impacts due to historic and on-going milling and smelting activities in the Sudbury basin have been identified.

St. Marys River: Contaminated dredged spoils from the local steel mill (Algoma Slip) must be disposed of in an approved waste disposal site. Dredged spoils from navigation channels are approved for open water disposal.

Peninsula Harbour (Marathon): Peninsula Harbour is located on the northeast shore of Lake Superior at Marathon. Sediments with elevated levels of mercury and PCBs extend approximately 3 kilometers from Marathon to a depth of 2 to 36 meters. This sediment exceeds guidelines for open water disposal of dredged materials. There is an estimated volume of 55,000 cubic meters of sediment in the shallow water areas of the Harbour (Jellicoe Cove) that exceeds Provincial Sediment Quality Guidelines, with approximately 26,000 cubic meters residing in the area of highest concentration. Assessment and remediation studies are underway.

Jackfish Bay: Jackfish Bay is located on the north shore of Lake Superior, approximately 250 kilometers northeast of Thunder Bay. The AOC consists of a 14 kilometer stretch of Blackbird Creek between a pulp and paper mill and Jackfish Bay. The RAP (Stage 2, October 1997) recommended a natural recovery strategy in which little or no outside interference occurs and the ecosystem is allowed to recover on its own.

Nipigon Bay: Nipigon Bay is the northernmost area of Lake Superior. No significant contaminated sediment has been identified.

Thunder Bay Harbour: The Thunder Bay AOC extends approximately 28 kilometers along the shoreline of Lake Superior and up to 9 kilometers offshore from the city of Thunder Bay. There are two areas within the AOC with significant sediment contamination.

1) **Northern Wood Preservers.** Approximately 21,000 cubic meters of contaminated sediment (total PAH levels between 30 and 150 ppm) were contained within a rockfill berm and capped using clean fill. Approximately 11,000 cubic meters of the most highly contaminated sediment (above 150 ppm total PAH) were dredged and will be treated. The remaining 28,000 cubic meters of contaminated sediment (80% of which is less than 50 ppm total PAH) outside the berm will undergo natural recovery.

2) **Provincial Papers.** There are an estimated 18,000 cubic meters of mercury-contaminated sediment. Remediation options are under assessment.

Long-Range Transport Challenge Update

Under the Great Lakes Binational Toxics Strategy, EC and EPA committed to

> *"Assess atmospheric inputs of Strategy substances to the Great Lakes. The aim of this effort is to evaluate and report jointly on the contribution and significance of long-range transport of Strategy substances from worldwide sources. If ongoing long-range sources are confirmed, work within international frameworks to reduce releases of such substances."*

In support of this challenge, the US and Canada have:

- Maintained the Great Lakes Integrated Atmospheric Deposition Monitoring Network (IADN) stations,
- Improved the integration of monitoring networks and data management, and
- Continued research on the atmospheric science of toxic pollutant transport.

Following the strategy's 4-step analytical framework to evaluate and report jointly on the contribution and significance of long-range transport of Strategy substances from worldwide sources, the EC and EPA have accomplished the following:

Step 1. Information Gathering - To assess current activities and prepare a report on the state of the contribution and significance of long-range transport of Strategy substances to the Great Lakes from worldwide sources.

ACTION: A literature review and assessment of the long-range transport of persistent toxic substances to the Great Lakes was undertaken in 1999, and a report was published by the Canadian firm ORTECH Environmental on March 27, 2000. The following is the Executive Summary of that report, entitled *Long-range Transport of Persistent Toxic Substances to the Great Lakes: Review and Assessment of Recent Literature*.

In 1997, Canada and the U.S. signed The Great Lakes Binational Toxics Strategy (GLBTS) which has the virtual elimination of persistent toxic and bioaccumulative substances from the Great Lakes ecosystem as its aim. Two classes of substances, designated Level I and II, are being addressed by the GLBTS as well as by the Binational Virtual Elimination Strategy (BVES) for persistent toxic substances. The Level I substances are given higher priority for elimination than the Level II class of substances. One target of these initiatives is the identification of atmospheric inputs of toxic substances to the Great Lakes due to worldwide sources; the present study, commissioned by the Atmospheric Environment Service of Environment Canada, contributes to this initiative. The overall study objective is to review the feasibility of making estimates of the fraction of each Strategy substance that is likely arriving to each of the Great Lakes via the atmosphere from local, continental and global sources, and where feasible, make such estimates. Modelling or deposition estimate calculations were not within the scope of the study.

A prior compilation of literature up to 1997 on deposition to the Great Lakes, commissioned by the International Joint Commission's International Air Quality Advisory Board, was the starting point for the present study, and only literature that has appeared since 1997 was presently reviewed. Scientists at Environment Canada had a consultative role in this study to provide expertise and guidance in the overall approach to the work. In addition, direct contact was made with other researchers to obtain information on work that is still in progress.

As a first approach, information on the atmospheric life-times of BVES substances was reviewed to assess their likely transport distances in the atmosphere. On the basis of these estimates, sources of toxics in regions beyond their likely transport ranges, can be disregarded in assessments of Great Lakes impacts. The two main mechanisms that remove airborne toxics from the atmosphere and limit their atmospheric life-times are: (1) chemical and photochemical destruction; and (2) wet and dry deposition that deposit the substances on land and water surfaces. While considerable research has been carried out to estimate the chemical and photochemical reaction rates in the atmosphere for persistent organic substances, considerable uncertainty remains regarding degradation rates through heterogeneous chemical and photochemical reactions on atmospheric particulate materials and aerosols. Wet and dry deposition rates are highly dependent on the partitioning between the gas phase, and particulate or aerosol phases. Equilibrium macro-models of the partitioning can provide first estimates of the predominant phase for toxics in the atmosphere, however, for more complex partitioning involving wet aerosols and physical-chemical processes, micro-kinetic models will be needed. In the case of metals, the chemical form in the atmosphere can also be extremely important.

Sources of BVES substances were reviewed at local, regional, intercontinental, and global scales and were found to be extremely varied. Substances that are formed during combustion process, for example, have almost a global distribution, while other substances are banned from use in some regions of the globe but continue to have use in other areas. Although sources of BVES substances appear to be fairly well known, there is a need to further develop high quality emission inventories that address both point and area sources at the spacial resolution required by models. Of the 28 BVES substances that have a long range transport, five have potentially sufficient global inventory data to support modelling efforts. For banned substances there is a need to address past use to account for residues in soil, especially at the local and regional scales. By

combining information on atmospheric life-times and distribution of sources and at the local, regional, intercontinental, and global scales, first order estimates can be made of the potential for long-range transport contributions to Great Lakes deposition.

The second approach to quantifying the contribution of long-range transport to Great Lakes deposition involves the application of transport models. These methods can be generally divided into the following categories: theoretical modelling of the transport, transformation and deposition of emitted substances over local, regional or global scales; back trajectory models that can relate source regions to the incidence of elevated ambient air concentrations over the Great Lakes; inferential methods, such as measured enantiomer ratios and spatial and temporal distributions of air concentrations, that assist in identifying the sources of toxics. While measurements of air quality provide valuable insights regarding the magnitude of deposition fluxes to the Great Lakes and enantiomer ratios can in some cases discriminate between fresh emissions and those due to soil residues, only transport and deposition models are presently able to quantify the relative contributions of source regions to Great Lakes impacts.

Both Lagrangian trajectory and Eulerian transport and deposition models have been used to study Great Lakes impacts. In cases where the grasshopper effect does not play a significant role, and where chemistry and partitioning between phases in the atmosphere are relatively simple, Lagrangian models can be used for deriving source-receptor relationships over regional or smaller scales. Lagrangian trajectory models are, however, limited in their application for global transport and deposition studies due to inherent limitations for simulating the complex 3-D global transport processes that are driven by global meteorology. It is concluded that comprehensive Eulerian models are potentially superior tools for providing quantitative estimates of the relative contributions of the different source regions of the globe to Great Lakes impacts. Further model development is needed, however, particularly in modelling the micro-kinetics involving wet and dry atmospheric particulates and aerosols, and in the air-surface exchange with terrestrial surfaces.

For other substances, a preliminary attempt has been made in this report to identify the dominant source distances contributing to the deposition of BVES to the Great lakes. The distance estimates are based on published atmospheric life-time estimates and on inferences gleaned from studies presently reviewed. It is emphasized that these results are subjective, and at best, they are very low order estimates that might be used with caution to provide some guidance for future studies. While several modeling studies are found in the literature, few of the studies reviewed quantify the relative contributions of global source regions to Great Lakes deposition. A recent Lagrangian model study, however, does address the deposition of polychlorinated-p-dioxins to the Great lakes from sources in the U.S. and Canada. This study shows that for Lakes Superior and Huron, between 20 and 40% of the deposition in 1995/1996 was due to sources at regional distances (400 - 1,500 km) from the lakes while for the other three Lakes, local sources (within 100 km) contributed between 40 and 60% of the total dioxin deposition; deposition contributions by sources in other parts of the globe would reduce these percentage estimates.

The overall conclusion of this review is that while several qualitative assessments and quantitative modeling studies are reported for atmospheric transport and deposition to the Great Lakes, there is very limited information available to quantitatively link emission sources at global, continental, regional or local distance to Great Lakes impacts.

The following recommendations arise from this study:

- for comprehensive models, a better understanding of the roles of particulates, aerosols and terrestrial surfaces in heterogeneous chemical and photochemical reactions of BVES substances should be developed and the models should be extended to include the micro-kinetic processes for toxics involving atmospheric particulates and aerosols as well as the exchange of toxics with terrestrial surfaces;

- effort should be directed toward the compilation of high quality emissions inventories for BVES substances on appropriate scales for model input; for banned pesticides that are still used in other parts of the globe, and have significant soil residues in North America due to historical applications, effort should be directed toward measurement surveys to define the distribution of these residues on appropriate scales for modelling;

- to reduce the large effort required to address all BVES substances, a sub-set of substances should be selected for study that are representative of the different ranges of physical-chemical properties.

Step 2. Analysis - Consult experts on knowledge gaps and options for a path forward.

ACTION: A binational experts workshop is being planned for October 2001.

Next Steps

In October 2001, EC and EPA will hold a workshop that will bring experts together to help characterize data gaps, solicit pertinent information, and recommend options for a path forward. Once data gaps have been identified, information will be solicited to help quantify substance characteristics, gather usage/emission inventory information within and outside the basin, collect ambient measurement information, and evaluate previous models or assessments of atmospheric transport.

Under the PBT Initiative, USEPA Assistant Administrators designated monitoring and measurement as one of two major cross-cutting issues in the initiative. As a result, EPA's Office of Research and Development has convened a workgroup to develop a monitoring strategy for the Level I substances that will address modeling the relative contribution of these contaminants from long-range transport. One of two workshops dealing with this issue is scheduled in March 2001.

APPENDIX:
GREAT LAKES BINATIONAL TOXICS STRATEGY
TIME LINE

The following section presents an overview of Great Lakes Binational Toxics Strategy progress and includes not only activities undertaken by the workgroups and the governments since the strategy was signed in 1997, but also various activities related to the goals and objectives of the Binational Toxics Strategy.

GREAT LAKES BINATIONAL TOXICS STRATEGY (GLBTS)
PROGRESS OVERVIEW 1997 - 2000

	YEAR			
	1997 and earlier	**1998**	**1999**	**2000 and ongoing**
General GLBTS Activities				
GLBTS Development, the Integration Group, and the Stakeholders Forum	- 4/7/97 U.S. and Canada sign the *GLBTS: Canada-United States Strategy for the Virtual Elimination of Persistent Toxic Substances in the Great Lakes* - 6/26/97 Stakeholders invited to workshop to develop a draft GLBTS Implementation Plan - 12/97 GLBTS Implementation Plan distributed and substance-specific participation solicited - 12/97 GLBTS web page is developed	- 3/23/98 Kick-off implementation meeting in Chicago to form seven substance-specific workgroups - 6/19/98 The first GLBTS Integration Group meeting is convened in Romulus Michigan - 6/98 GLBTS web site is redesigned; PCBs and Hg workgroup pages added - 7/98 GLBTS web site is redesigned; integration, dioxins, pesticides, HCB/B(a)P, alkyl-lead, and OCS workgroup pages added - 10/21-23/98 GLBTS display and presentation (including GLBTS handouts - a brochure, website cards, GLBTS progress timeline and activity sheets) at the SOLEC Conference in Buffalo, NY - 11/16/98 The first GLBTS Stakeholder Forum is convened in Chicago, IL	- 1/26/99 GLBTS Integration Group meets in Windsor, Ontario - 4/27/99 GLBTS Stakeholder Forum is held in Toronto, Ontario - 4/28/99 GLBTS Integration Group meets in Toronto, Ontario - 8/24/99 GLBTS Integration Group meets in Detroit, Michigan - 9/23-26/99 EPA, EC and invited speakers give GLBTS Session presentation at the IJC Great Lakes Water Quality Forum in Milwaukee, WI - 9/24/99 A preliminary draft GLBTS Progress Report issued at IJC meeting in Milwaukee, WI - 10/99 GLBTS main and mercury workgroup web pages are redesigned - 10/7/99 A Canadian GLBTS *Report on Level II Substances* is posted on the GLBTS web page - 11/18/99 GLBTS Stakeholder Forum is held in Chicago, Illinois - 11/19/99 GLBTS Integration Group meets in Chicago, Illinois	- 1/28/00 Municipal Solid Waste and Incineration Workgroup planning conference call - 2/11/00 Municipal Solid Waste and Incineration Workgroup planning conference call - 2/15/00 GLBTS Integration Group meets in Windsor, Ontario - 5/15/00 Protecting the Great Lakes, Sources of PBT Reductions Workshop on Municipal Solid Waste Management is held in Toronto, Ontario - 5/16/00 GLBTS Stakeholder Forum is held, with the theme “Meeting the Challenge”

	YEAR			
	1997 and earlier	**1998**	**1999**	**2000 and ongoing**
GLBTS Development, the Integration Group, and the Stakeholders Forum		- 11/16/98 The first GLBTS progress report is distributed	- EC and EPA develop draft communications strategy, present it to Integration Group, and revise strategy based on stakeholder comments - 12/99 Preliminary planning initiated for a PCP Workshop (to include the GLBTS pesticides, HCB and dioxins/furans workgroups) - 12/3/99 A U.S. *GLBTS Report on Level II Substances* is posted on the GLBTS web page - 12/15/99 Draft(Full) 1999 GLBTS Progress Report issued - 1999 (various dates) Development of a Canadian GLBTS communications plan	- 9/22/00 GLBTS Integration Group meets in Chicago, Illinois - 2000 (various dates) GLBTS communications plan is finalized by EC; "key messages" finalized; various communications products in development (brochure, business cards, display unit, letterhead, web site improvements, success stories)

	YEAR			
	1997 and earlier	**1998**	**1999**	**2000 and ongoing**
Substance-Specific Activities				
Mercury (Hg)				
GLBTS Workgroup Activities		- 3/23/98 WG is formed at the first implementation meeting - 5/5/98 WG conference call is held - 11/16/98 WG meeting at the GLBTS Stakeholder Forum in Chicago, IL - 11/17/98 GLBTS workshop on Potential Mercury Reductions at Electric Utilities is held in Chicago	- 4/99 Workshop on community initiatives for reducing Hg - 1/99 GLBTS web postings include: *Wisconsin Mercury Source Book* on community Hg reduction plans, findings of the *Mercury Reduction at Electric Utilities* workshop, and *Mercury Success Stories* - 2/99 Information and FAQs on mercury fever thermometers posted on the GLBTS web page - 3/99 GLBTS web postings include: The WDNR guide, *Mercury in your Community and Environment,* and a manual for hospitals, *Reducing Mercury Use in Health Care* - 4/27/99 WG meeting at the GLBTS Stakeholder Forum in Toronto, Ontario - 11/18/99 WG meeting at the GLBTS Stakeholder Forum in Chicago, Illinois	- 5/16/00 WG meeting at the GLBTS Stakeholder Forum in Toronto, Ontario - 6/00 GLBTS web page on Mercury Thermometers and Frequently Asked Questions is updated - 10/17 Expansion of mercury web page links - 11/17 WG meeting at the GLBTS Stakeholder Forum in Toronto
GLBTS Reports		- 8/24/98 Background Information on Mercury Sources and Regulations is posted on the GLBTS web page - 9/10/98 Options Paper *Developing a Virtual Elimination Strategy for Mercury* is posted on the GLBTS web page	- 11/99 Draft GLBTS Step 1&2 *Sources and Regulations* report for Hg is posted on the GLBTS web page	- A final draft GLBTS *Reduction Options* (Step 3) report for mercury is prepared (9/1/00) and posted (9/29/00) on the GLBTS web page

	YEAR			
	1997 and earlier	**1998**	**1999**	**2000 and ongoing**
Other Related Activities	- Chlorine Institute voluntary Hg commitment to reduce Hg use by 50% by 2005 - 12/97 *Mercury Report to Congress* is released by EPA	- 5/8/98 Chlorine Institute releases progress report on voluntary Hg commitment - 6/25/98 EPA and AHA sign a MOU on reducing medical wastes - 9/15/98 Three northwest Indiana steel mills commit to developing mercury inventories and reduction plans - 10/98 IDEM household mercury collection efforts - Dow Chemical Company commits to Hg reductions - Six Ontario hospitals sign MOU to voluntarily reduce Hg - Pollution Probe investigates Hg reduction options for electrical products sector in Ontario - Automotive Pollution Prevention Project efforts to phase out Hg - EPA grant to Ecology Center of Ann Arbor: promoting mercury P2 in the health care industry - WLSSD begins multimedia zero discharge pilot / focus on Hg - Michigan Mercury Pollution Prevention Task Force - 11/16/98 A draft PBT National Action Plan for Mercury is released by EPA	- PBT Strategy grant to the Northeast Waste Management Officials' Association to encourage state Hg reduction efforts - 8/99 As part of 1998 agreement, Hg inventories at Indiana steel mills are completed - 10/99 Hg waste collection component of the Cook County (Illinois) Clean Sweep pilot begins	- Chlorine Institute reports 42% reduction, production-adjusted, in mercury use - EPA, states agencies, and academic researchers conduct meetings with chlor-alkali industry representatives to coordinate mercury reduction projects - Olin Corp. cooperates with EPA, State, and academic researchers on mercury monitoring project at chlor-alkali plant - Indiana steel mills complete mercury reduction plans; extend invitation to suppliers to commit to developing mercury inventories and reduction plans - Auto Alliance commits to eliminate mercury switches in auto convenience lighting; New York DEC and Michigan DEQ implement mercury removal programs at auto scrap yards - Hospitals for a Healthy Environment produces a Mercury Virtual Elimination Plan for hospitals under the AHA-EPA MOU. State and local governments provide technical assistance to hospitals, and the National Wildlife Federation (NWF) continues its outreach and education efforts, signing up nearly 600 medical facilities to NWF's "Mercury Free Medicine Pledge." - Wisconsin DNR and Department of Agriculture conduct a dairy mercury manometer replacement program; approximately 375 mercury manometers are recycled.

	YEAR			
	1997 and earlier	**1998**	**1999**	**2000 and ongoing**
Other Related Activities			- Total mercury used in lamps declines from an estimated 17 tons in 1994 to an estimated 13 tons in 1999, even though significantly more mercury containing lamps are sold in 1999 than in 1994.	- University of Wisconsin extension creates a website and list server to share information about mercury in schools. - The Thermostat Recycling Corporation collects over 500 lbs of mercury from over 57,000 thermostats collected and processed from January 1, 1998 to June 30, 2000. The program is expanded to the Northeast and will gradually be expanded to include the entire U.S. - The Great Lakes Dental Mercury Reduction Project funded by the Great Lakes Protection Fund produces a brochure template: Amalgam Recycling and Other Best Management Practices. Great Lakes Dental Associations reprint and distribute this document to their memberships. The University of Illinois-Chicago dental school and the Naval Dental Research Institute conduct research on controlling mercury in dental wastewater and help to educate dentists about best management practices. - Coalitions including Health Care Without Harm and the National Wildlife Federation successfully encourage several national retailers to stop the sale of mercury-containing thermometers to the public. Duluth, Minnesota, Ann Arbor Michigan, unincorporated areas of Dane County, Wisconsin, and several Dane Country municipalities, ban the sale of mercury thermometers.

	YEAR			
	1997 and earlier	**1998**	**1999**	**2000 and ongoing**
Polychlorinated Biphenyls (PCBs)				
GLBTS Workgroup Activities		- 3/23/98 WG is formed at the first implementation meeting - 11/16/98 WG meeting at the GLBTS Stakeholder Forum in Chicago, IL - 6/15/98 The workgroup requests that the IG develop a strategy on sediments	- 4/27/99 WG meeting at the GLBTS Stakeholder Forum in Toronto, Ontario - 11/18/99 WG meeting at the GLBTS Stakeholder Forum in Chicago, Illinois - Workgroup solicits and gains commitment of 3 U.S. auto manufacturers to reduce PCBs - Workgroup solicits commitment of steel producers to reduce PCBs	- 5/16/00 WG meeting at the GLBTS Stakeholder Forum in Toronto, Ontario - Workgroup solicits and gains commitment of 2 Canadian auto manufacturers, 4 Canadian steel producers, and over 30 municipal electrical utilities in Ontario to reduce PCBs - Workgroup leaders and Council of Great Lakes Industries (CGLI) finalize outreach letters used to seek PCB reduction commitments from trade associations. CGLI identifies specific trade associations to begin outreach. EC mails letters to trade initial associations. EPA mailings to follow. - Workgroup begins to compile case study reports on reasons why companies remove their PCBs - Workgroup begins to collect photographs of PCB-containing electrical equipment to assist potential owners with identification of equipment which may contain PCBs - Workgroup drafts a fact sheet on PCB containing submersible well pumps to be used for outreach to potential users of wells and servicers of well pumps.

	YEAR			
	1997 and earlier	**1998**	**1999**	**2000 and ongoing**
GLBTS Reports		- 11/10/98 Options Paper *Virtual Elimination of PCBs* is posted on GLBTS web page - 11/12/98 Background Information on PCB Sources and Regulations is posted on the GLBTS web page	- 11/99 Draft GLBTS Step 1&2 *Sources and Regulations* report for PCBs is posted on the GLBTS web page	- Final draft GLBTS Step 3 *Reduction Options* report for PCBs is prepared (7/14/00) and posted (9/29/00) on the GLBTS web page
Other Related Activities		- Automotive Pollution Prevention Project efforts to phase out PCBs - Small Quantity PCB Owner Outreach Program started in Ontario - Municipal Electric Association Outreach Program in Ontario - Ontario Mining Association Outreach program - NORA and Region 5 begin clean sweep program for used PCB oil and wastewater - Region 5 PCB Phasedown pilot project continues - EPA finalizes PCB regulations which include a requirement for U.S. owners to register their PCB transformers	- EC and Ontario government hold two workshops on PCB management in the Toronto area - 10/99 PCB waste collection component of the Cook County (Illinois) Clean Sweep pilot begins - U.S. PCB transformer registration database is updated - Canadian Steel Producer Association Outreach Program - Association of Municipal Recycling Coordinators Outreach Program in Ontario	- EPA is finalizing a PCB transformer reclassification rule - Region 5 PCB Phasedown Program pilot project continues and pilot PCB phasedown enforcement policy is finalized - A PBT workgroup continues to work on a National Action Plan for PCBs - EC updates National PCB In - Service Inventory - EC proposes regulations which would require the phase out of PCBs in Canada - PCB/Hg Cook County Clean Sweep pilot concludes

	YEAR			
	1997 and earlier	**1998**	**1999**	**2000 and ongoing**
Dioxins/Furans				
GLBTS Workgroup Activities		- 3/23/98 WG is formed at the first implementation meeting - 11/16/98 WG meeting at the GLBTS Stakeholder Forum in Chicago, IL	- 4/27/99 WG meeting at the GLBTS Stakeholder Forum in Toronto, Ontario - 6/1/99 WG Conference call: sources discussions - 7/7/99 WG Conference call: sources discussions - 9/7/99 WG Conference call: developing a decision tree source prioritization process - 10/5/99 WG Conference call: finishing development of a decision tree process - 11/18/99 WG meeting at the GLBTS Stakeholder Forum in Chicago, Illinois - 12/7/99 WG Conference call: application of the decision tree process	- 1/11/00 WG Conference call: continuing the decision tree process - 2/1/00 WG Conference call; decision made to initiate a Burn Barrel Sub Group - 3/7/00 WG Conference call: continuing the decision tree process - 4/4/00 WG Conference call: continuing the decision tree process - 4/4/00 Burn Barrel Sub Group has inaugural teleconference - 4/25/00 Burn Barrel Sub Group teleconference: discussion of strategy matrix - 5/2/00 WG Conference call: continuing the decision tree process - 5/16/00 WG meeting at the GLBTS Stakeholder Forum in Toronto, Ontario > the decision tree process is completed - 7/11/00 WG Conference call: developing reduction projects for high priority sectors - 8/1/00 Burn Barrel Sub Group teleconference: discussion Terms of Reference; link to Lake Superior LaMP - 9/12/00 WG Conference call: developing reduction projects - 9/12/00 Burn Barrel Sub Group teleconference: discussion of Chisago County "Buyback" program; discussion of survey questions regarding state/local regulatory frameworks, and garbage quantity/quality questions. - 11/14/00 Burn Barrel Sub Group teleconference: outline of a strategy document prepared.

	YEAR			
	1997 and earlier	**1998**	**1999**	**2000 and ongoing**
GLBTS Reports				- 5/26/00 GLBTS draft Step 1&2 *Sources and Regulations* report is prepared - 8/18/00 An addendum to the GLBTS Draft *Sources and Regulations* report is prepared to addressed the newly released U.S. Dioxin Reassessment and the draft report is posted (9/29/00) on the GLBTS web - Final GLBTS Step 3 *Reduction Options* report is prepared (9/27/00) and the report is posted (9/29/00) on the GLBTS web page
Other Related Activities		- WLSSD begins multimedia zero discharge pilot / focus on dioxins	- Two Ontario utilities eliminate use of PCP in treated poles	- 1/00 WLSSD report on open barrel burning practices is released - 2/00 Wood stove changeover pilot programs in Traverse City, MI, and Green Bay, WI - 6/12/00 draft chapters of the *U.S. Dioxin Reassessment* for external scientific review are released - 9/28/00 Three draft chapters of the *U.S. Dioxin Reassessment* for SAB review are released - PCP re-registration review proceeding as joint Canada/U.S. endeavor

	YEAR			
	1997 and earlier	**1998**	**1999**	**2000 and ongoing**
Level 1 Pesticides				
GLBTS Workgroup Activities and Reports		- 3/23/98 WG is formed at the first implementation meeting - 11/16/98 WG meeting at the GLBTS Stakeholder Forum in Chicago, IL - 12/31/98 Draft GLBTS Challenge report for the Level 1 pesticides is posted on the GLBTS web page	- 4/27/99 WG meeting at the GLBTS Stakeholder Forum in Toronto, Ontario - 11/18/99 WG meeting at the GLBTS Stakeholder Forum in Chicago, Illinois	- 5/16/00 WG meeting at the GLBTS Stakeholder Forum in Toronto, Ontario - GLBTS U.S. Pesticides Challenge Report: *The Level 1 Pesticides in the Binational Strategy* is finalized (3/1/00) and posted (9/29/00) - 05/00 EC announces that with the cooperation of PMRA they have reevaluated their position on Level I pesticides and that based on all available information have met the Level I challenge.
Other Related Activities	- 10/96 EC prepares report: *Canada-Ontario Agreement Objective 2.1: Priority Pesticides Confirmation of No Production, Use, or Import in the Commercial Sector in Ontario*		- EPA funding to four existing Clean Sweep programs for pilot data collection efforts for Level 1 pesticides	- PCP re-registration review proceeding as joint Canada/U.S. endeavor - Draft National Action Plan for Level 1 Pesticides under the U.S. National PBT Initiative completed and released for review and public comment - PBT Pesticides Workgroup reviewing toxaphene remediation in Brunswick, GA - Level 1PBT pesticides (except mirex) are regularly collected by ongoing Clean Sweep programs - Phase out of the Level 2 Pesticides lindane and tributyl tin compounds are the subject of bi-national negotiations through Pesticide Regulatory Agencies in the U.S. and Canada

	YEAR			
	1997 and earlier	**1998**	**1999**	**2000 and ongoing**
Hexachlorobenzene (HCB) / Benzo(a)pyrene (B(a)P)				
GLBTS Workgroup Activities and Reports		- 3/23/98 WG is formed at the first implementation meeting - 9/98 & 10/98 Discussions are held with the pesticide manufacturing, chlorinated solvent manufacturing, and petroleum refinery industries regarding their emission levels, and to determine any success stories, pollution prevention opportunities, and other planned or possible emission reduction actions - 11/16/98 WG meeting at the GLBTS Stakeholder Forum in Chicago, IL	- 4/27/99 WG meeting at the GLBTS Stakeholder Forum in Toronto, Ontario - 11/18/99 WG meeting at the GLBTS Stakeholder Forum in Chicago, Illinois - 11/99 Draft GLBTS Step 1&2 *Sources and Regulations* Reports for B(a)P and HCB are posted on the GLBTS web page	- 5/16/00 WG meeting at the GLBTS Stakeholder Forum in Toronto, Ontario - Discussions held with the U.S. Scrap Tire Management Council and scrap tire managers in the Midwest - 6/15/00 Final drafts GLBTS Step 3 *Reduction Options* reports for B(a)P and HCB are prepared - 7/12/00 Final drafts GLBTS Step 3 *Reduction Options* reports for B(a)P and HCB are posted on the GLBTS web page - 9/21/00 WG conference call is held - 10/00 draft Canadian Steps 1&2 reports for HCB and BaP(PAHs) circulated to stakeholders and workgroup members for comments
Other Related Activities		- Dow Chemical Company commits to HCB reductions	- Two Ontario utilities eliminate use of PCP in treated poles - U.S. chlorothalonil manufacturer reduces HCB content through process improvements - 10/99 Draft Report, *Global HCB Emissions* (Robert Bailey, 1999), is distributed to the WG - 01/99 wood stove changeover pilot program for Eastern Ontario	- 1/00 WLSSD report on open barrel burning practices is released - 2/00 Wood stove changeover pilot programs in Traverse City, MI, and Green Bay, WI - PCP re-registration review proceeding as joint Canada/U.S. endeavor - PBT workgroups continue to work on draft National Action Plans for HCB and B(a)P - 5/5/00 Robert Bailey prepares report, *HCB Concentration Trends in the Great Lakes*, for the WG

	YEAR			
	1997 and earlier	**1998**	**1999**	**2000 and ongoing**
Alkyl-lead				
GLBTS Workgroup Activities and Reports		- 3/23/98 WG is formed at the first implementation meeting - 11/16/98 WG meeting at the GLBTS Stakeholder Forum in Chicago, IL - 12/31/98 Draft GLBTS Challenge report for alkyl-lead is posted on the GLBTS web page	- 1/99 EC prepares *Alkyl Lead Inventory Study - Sources, Uses and Releases in Ontario, Canada: A Preliminary Review*, and posts report on the GLBTS web page. The report concludes that the Canadian challenge of reducing alkyl-lead use by 90% between 1988 and 2000 has been exceeded. - 9/8/99 GLBTS and PBT workgroups meet with National Motor Sports Council to discuss voluntary phase-out of leaded gasoline - 10/29/99 draft GLBTS *Sources, Regulations and Options* (Steps 1, 2 & 3) Report for Alkyl-Lead is posted on the GLBTS web page	- GLBTS *Sources, Regulations, and Reduction Options* (Step 1, 2 & 3) report for alkyl-lead is finalized (6/00) and posted (9/29/00) on the GLBTS web page - GLBTS U.S. Challenge on Alkyl-lead: *Report on the Use of Alkyl-lead in Automotive Gasoline* is finalized (6/00) and posted (9/29/00) on the GLBTS web page
Other Related Activities			- Work begins on a draft National PBT Action Plan for Alkyl-lead	- 8/25/00 A Draft PBT National Action Plans for alkyl-lead is posted on the PBT web page for public review and comment - Auto racing industry expresses interest in working with USEPA to find lead-free gas substitutes

	YEAR			
	1997 and earlier	**1998**	**1999**	**2000 and ongoing**
Octachlorostyrene (OCS)				
GLBTS Workgroup Activities and Reports		- 3/23/98 WG is formed at the first implementation meeting - 6/16/98 Background Paper and Draft Action Plan for OCS posted on GLBTS web - 11/16/98 WG meeting at the GLBTS Stakeholder Forum in Chicago, IL - 12/31/98 Draft GLBTS Challenge report for OCS is posted on the GLBTS web page	- 4/27/99 WG meeting at the GLBTS Stakeholder Forum in Toronto, Ontario - 11/18/99 WG meeting at the GLBTS Stakeholder Forum in Chicago, Illinois - Data on OCS trends in fish is assessed by the WG	- 5/16/00 WG meeting at the GLBTS Stakeholder Forum in Toronto, Ontario - 9/22/00 Draft GLBTS Stage 3 report for OCS is distributed at the 9/22 Integration Group meeting and e-mailed to the OCS workgroup
Other Related			- 3/10/99 CGLI report, *OCS and Suggested Industrial Sources: A Report to the GLBTS Workgroup*, is submitted to the workgroup	- 8/25/00 A Draft PBT National Action Plan for OCS is posted on the PBT web page for public review and comment

	YEAR			
	1997 and earlier	**1998**	**1999**	**2000 and ongoing**
Sediments				
Canadian and U.S. Activities		- 6/15/98 PCB workgroup requests that the IG develop a strategy on sediments - 6/19/98 Integration Group discusses sediments challenge - EPA provides guidance to workgroups on how to deal with sediments within chemical-specific workgroups	- 1/26/99 Overview and presentation of IJC SedPAC Activites given at Integration Group meeting - 2/99 Integration Group members develop a draft charge for a sediments subgroup - 4/28/99 Draft Sediments subgroup charge presented at Integration Group meeting	- 2/15/00 EPA and EC present a draft sediment reporting format at the Integration Group meeting. The proposed format will map progress and report annually on sediment remediation in the Great Lakes Basin using 1997 as the baseline year - 5/16/00 At the Stakeholder Forum, EPA and EC present the draft sediment reporting format and commit to hold a sediment technology workshop - A workshop "Removing and Treating Great Lakes Contaminated Sediment" which will focus on technologies, along with case studies and demonstration projects, is being planned for early 2001
Related Activities	- 11/97 The IJC's Sediment Priority Action Committee (SedPAC) issues draft white paper *Overcoming Obstacles to Sediment Remediation in the Great Lakes Basin*	- 12/1-2/98 IJC SedPAC holds "Workshop to Evaluate Data Interpretation Tools Used to Make Sediment Management Decisions" in Windsor, Ontario		
Long Range Transport				
			- 11/19/99 EC presents the status of their LRT effort at the Integration Group meeting	- 3/27/00 EC prepares report: *Long-range Transport of Persistent Toxic Substances to the Great Lakes: Review and Assessment of Recent Literature* (Ortech Environmental)

	YEAR			
	1997 and earlier	**1998**	**1999**	**2000 and ongoing**
General Activities Related to Reductions in GLBTS Substances				
U.S. EPA Regulatory Determinations	- 12/95 MACT rules for large MWC are promulgated - 9/97 MACT rules for MWI are promulgated	- 4/15/98 Pulp, Paper, and Paperboard Cluster Rule is promulgated - 6/29/98 Amendments to the PCB Disposal Regulations are finalized - 11/12/98 Federal Plan for MACT Implementation for large MWCs is finalized	- 5/28/99 An Advance Notice of Proposed Rulemaking is released for the RCRA LDR for Mercury-Bearing Hazardous Wastes - 7/6/99 Federal Plan for MACT Implementation for MWI is proposed - 8/30/99 MACT for small MWCs are proposed (expected to be final in 2000) - 9/30/99 Final Standards for Hazardous Air Pollutants for HWC are promulgated 10/29/99 TRI Amendments: new PBT reporting thresholds	- 12/00 Compliance deadline for large MWC MACT - 9/02 Compliance deadline for MWI MACT - 1/1/00 New TRI reporting thresholds for PBTs become effective - EPA is finalizing a PCB transformer reclassification rule - PCP re-registration review proceeding as joint Canada/U.S. endeavor
U.S. EPA Activities	- 6/97 *Deposition of Air Pollutants to the Great Waters: Second Report to Congress* is released - 12/97 *Mercury Report to Congress* is released	- 4/98 *Final Emission Inventory Data for Section 112(c)(6) Pollutants* is released - 11/16/98 EPA's Multimedia PBT Strategy is announced - 11/16/98 Under the PBT strategy, a draft National Action Plan for Mercury is released	- PBT Strategy grant awarded to WLSSD to work on reducing open trash burning - U.S. PCB transformer registration database is updated - Sample collection begins for the National Study of Chemical Residues in Fish - U.S. GLBTS workgroup leaders participate in development of Draft National Action Plans of part of PBT Strategy	- 6/00 *Deposition of Air Pollutants to the Great Waters: Third Report to Congress* is released - 6/12/00 draft chapters of the *U.S. Dioxin Reassessment* for external scientific review are released - 9/00 EPA's 1996 National Toxics Inventory is released - 9/28/00 Three draft chapters of the *U.S. Dioxin Reassessment* for SAB review are released - PBT workgroups continue to work on National Action Plans for HCB, B(a)P, the Level 1 pesticides, and PCBs - EPA's Office of Air and Radiation and Office of Water collaborate on an Air-Water Interface Workplan to address atmospheric deposition of toxics and nitrogen to U.S. water bodies.

	YEAR			
	1997 and earlier	**1998**	**1999**	**2000 and ongoing**
EC Regulatory Determinations		- Canadian Environmental Protection Act is renewed		- CWS (release limits) are developed for mercury, particulate matter, ozone, and benzene, and are being developed for dioxins/furans. - Canadian SOPs are under development for the Iron and Steel Manufacturing sector and finalized for the Wood Preservation sector - 6/19/00 EC solicits public comments on proposed amendments to the PCB regulations under CEPA
EC Activities		- Ontario “Drive Clean” program	- 1/99 The Canadian *Dioxins and Furans and Hexachlorobenzene Inventory of Releases* is finalized. - EC upgrades and digitizes its National PCB database	- Draft HCB, B(a)P (PAH), and OCS release inventories for Ontario are updated and circulated for review - EMA with Algoma Steel being finalized. - EC, in coordination with the Hearth Products Association, conducts testing of conventional and EPA-certified wood stoves to investigate releases of dioxins/furans, PAHs, HCB, and particulate matter

	YEAR			
	1997 and earlier	**1998**	**1999**	**2000 and ongoing**
Other Activities	- CEC issues Continental Pollutant Pathways Initiative	- 7/98 UNEP POPs Negotiations initiated - Under the GLWQA, The Lake Ontario Lamp Stage 1 report is released	- By the end of 1999, emission control retrofits either completed or underway at all large MWC in the U.S. - The initial Great Lakes Regional Air Toxics Emissions Inventory, using 1993 data, is released - The Lake Ontario Lamp Update 1999 is released	- Under the GLWQA, Canada and the U.S. work on restoring beneficial uses to 43 AOCs in the Great Lakes Basin through the RAP program - The Lake Erie, Lake Michigan, and Lakes Superior LaMPs 2000 are released - The Lake Ontario Lamp Update 2000 is released - The Lake Huron Initiative Action Plan is released - Numerous pilot projects and pollution prevention/reduction agreements relevant to toxics of concern are underway with the steel, automobile, and other manufacturing industries and utilities in Ontario and the U.S. Great Lakes states - 11/8-9/00 Atmospheric deposition workshop held, *Using Models to Develop Air Toxics Reduction Strategies* - 12/00 Final POPs negotiations - Monitoring of air deposition of toxic pollutants in the Great Lakes basin continues under IADN - The 1996 Great Lakes Inventory of Toxic Air Emissions is prepared by the Great Lakes Commission

Abbreviations

AHA:	American Hospital Association
AOC:	Area of Concern
B(a)P:	Benzo(a)pyrene
CEPA:	Canadian Environmental Protection Act
CGLI:	Council of Great Lakes Industries
CWS:	Canada Wide Standards
DNR:	Department of Natural Resources
EC:	Environment Canada
EPA:	(U.S.) Environmental Protection Agency
GLBTS:	Great Lakes Binational Toxics Strategy
GLWQA:	Great Lakes Water Quality Agreement
HCB:	Hexachlorobenzene
Hg:	Mercury
HWC:	Hazardous Waste Combustors
IADN:	Integrated Atmospheric Deposition Network
IDEM:	Indiana Department of Environmental Management
LaMPs:	Lakewide Management Plans
LDR:	Land Disposal Restrictions
Level 1 Pesticides:	Aldrin, dieldrin, chlordane, DDT, mirex, toxaphene
MOU:	Memorandum of Understanding
MWC:	Municipal Waste Combustors
MWI:	Medical Waste Incinerators
NORA:	National Oil Recycler's Association
NPDES:	National Pollutant Discharge Elimination System
OCS:	Octachlorostyrene
P2:	Pollution Prevention
PAH:	Polycyclic Aromatic Hydrocarbon
PCBs:	Polychlorinated Biphenyls
POPs:	Persistent Organic Pollutants
RAPs:	Remedial Action Plans
RCRA:	Resource Conservation and Recovery Act
SAB:	Science Advisory Board
SOP:	Strategic Options Process
UNEP:	United Nations Environment Programme
WDNR:	Wisconsin Department of Natural Resources
WG:	Workgroup
WLSSD:	Western Lake Superior Sanitary District